

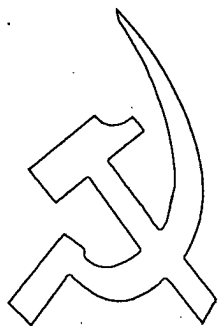
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N. S. KHRUSHCHOV

Chairman of the Council of Ministers of the U.S.S.R.

**TO VISITORS
of the
SOVIET
INDUSTRIAL
EXHIBITION**





On the occasion of the opening of the first Soviet Industrial Exhibition in London I am very happy to convey cordial greetings and sincere wishes for prosperity and peace to the people of Great Britain on behalf of the Soviet people, the Soviet Government and myself.

We have recently seen the British Trade Fair in Moscow. Our people have always admired the industry, the practical intelligence and technical skill of the British. Now it is our turn to present an exhibition of Soviet scientific, technical, cultural and social achievement.

The Soviet people were the first to blaze the trail into space. Our heavy-weight sputniks, spaceships, the Soviet pennant on the Moon, the automatic interplanetary station launched towards Venus—all these are accomplishments of a free people's creative work.

There followed man's first space flight, an outstanding event in the history of mankind, a great triumph for Soviet science and technology, for the Soviet political and social system. As you know, the pioneer of space travel was Yuri Gagarin, a citizen of the Soviet Union: He penetrated into space in the rocket ship **Vostok** built by Soviet scientists, workers, technicians and engineers, ascended to an altitude of more than 300 kilometres, circled the globe and landed safely in a predetermined area.

The Soviet people have shown their creative genius in many different fields. The Soviet Union is building atomic power stations, the first of which has been operating since 1954. The first atom-powered ice-breaker, **Lenin**, has successfully navigated the ice-bound Arctic. Modern Soviet air liners—the TU-104, the pioneer of civil jet aviation, the IL-18 and the TU-114, a giant 220-seater—are giving good service on domestic and international air lines.

You will see many of the achievements of Soviet science and technology at the Exhibition. The Soviet people are legitimately proud that the Soviet Union builds the world's biggest blast-furnaces, the most powerful electric stations, and modern plant of every kind. We are also pleased that every fourth

inhabitant of the Soviet Union is studying, that our country prints more books than any other, and that we annually graduate three times as many engineers as the United States. One out of every three doctors in the world works in the Soviet Union.

Every new Soviet achievement—be it in the field of space exploration or educational development—surprises the Western world. The capacity of the Soviet people for carrying out big and complicated tasks is often described as a "miracle" or a "Russian enigma".

Yet there is no "miracle" in it. The fact is that the working people in the Soviet Union are the true masters of the country's riches. Socialism offers immense possibilities for initiative, for the development of the creative energy and gifts of the people. This is where one ought to look for the source of all our successes. Never could our country have made such rapid progress without the vital interest which all working people have in the building of a new society. And we must remember that the Soviet people have had to endure unheard-of ordeals in their history. Yet the Soviet Union emerged from them stronger every time.

The good of the people is the supreme purpose of our state. The vigorous development of the Soviet economy makes for a measured and steady improvement in living conditions and the cultural standard of all citizens. Workers' and peasants' incomes are rising from year to year. Old-age pensions, pensions that guarantee a secure old age, are paid entirely out of the State Budget.

All taxes on workers and office employees are being abolished. The first to benefit under the new law were, naturally, the lower-paid working people, and by the end of 1966 the law will have come into full effect for all the others. The transition of all workers and office employees to a seven- and six-hour working day was completed last year. A further reduction of the working day to five and six hours will be effected in the not too distant future.

An ever-increasing portion of the personal requirements of the working people in our country are satisfied at the expense of the state, i.e., gratis. Allocations for social insurance and security (including paid holidays and holiday accommodations), for manifold cultural activities, public education, health and other services, which, I repeat, are provided free to all citizens without exception, amount this year to 35 per cent of the Budget of the U.S.S.R. We regard every further increase of these budget allocations to be an important means of raising the living standard.

Soviet people have to cope with many of their problems in difficult circumstances. It may be recalled that nearly half of the forty-three years of Soviet power have been spent in wars imposed on the Soviet people, and in post-war rehabilitation. Take the matter of housing. The city population has been rising steeply in our country in the last two or three decades. During the Second World War the Nazi aggressors demolished or gutted 1,710 Soviet cities and towns and more than 70,000 villages, leaving 25,000,000 people homeless. It is quite obvious, therefore, that our housing needs are very great.

Today, 15 or 16 flats are being built annually in the Soviet Union per 1,000 of the population, which is more than in any other country in the world. In seven years—from 1959 to 1965—we are planning to build 15,000,000 flats in the towns and 7,000,000 cottages in the countryside. This is equivalent to building about 50 new cities with populations as big as Liverpool's. (Incidentally, rents in the Soviet Union are the lowest in the world, amounting to no more than four or five per cent of a family budget.)

But no matter what difficulties we may still have to face (and difficulties are, naturally, unavoidable in so complicated and unexplored a matter as building a new society), the Soviet people are full of optimism. Things are going well with us.

Our national economy, which knows no crises of over-production and no unemployment, is developing at a rate three to five times higher than that of the United States, the most powerful of the capitalist countries. We shall overtake the United States in volume of production in the current decade, and then in output per head of the population. The time is not far distant when we shall be able to provide all working people in the Soviet Union with the world's highest living standard and the shortest working week.

This is the field of endeavour in which we persistently call on all countries to compete. What wrong can there be in all countries competing in the improvement of their peoples' living and cultural standards, rather than in the stockpiling of means of mutual annihilation? All peoples will gain from such competition.

The Soviet Government hopes that exhibitions like the British one in Moscow and the Soviet one in London will play a useful part in this matter. This will reinforce the traditional ties between Britain and the Soviet Union and make economic exchanges between them more extensive and mutually advantageous. A closer acquaintance with the achievements of our peaceful labour and national cultures will help us to know each other better.

The Soviet people believe that differences in ways of life and political and social systems should not obstruct fruitful and peaceful co-operation. We are convinced that the friendship and co-operation of the peoples of the Soviet Union and Great Britain will contribute immeasurably to the settlement of pressing international problems and the consolidation of world peace.

N. KHRUSHCHOV

*Chairman of the Council of
Ministers of the U.S.S.R.*

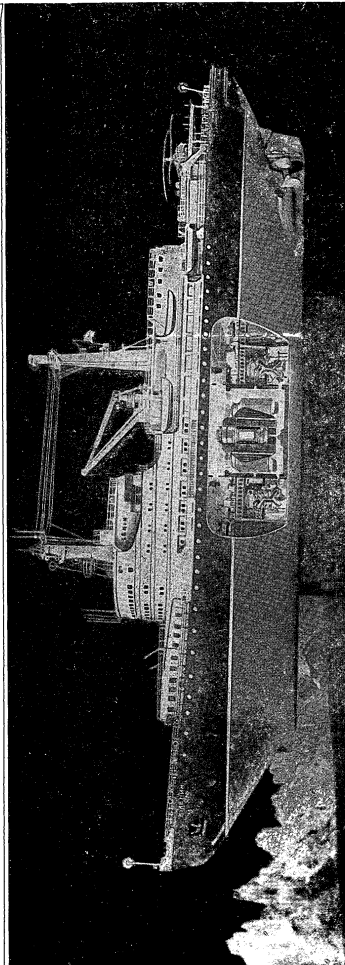
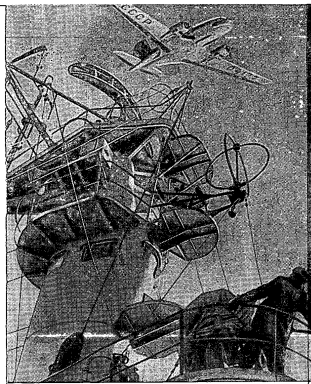
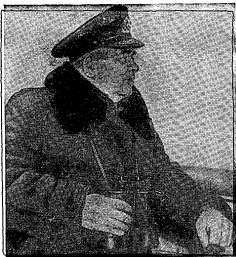
Printed in the Union of Soviet Socialist Republics

THE FIRST NAVIGATION RESULTS

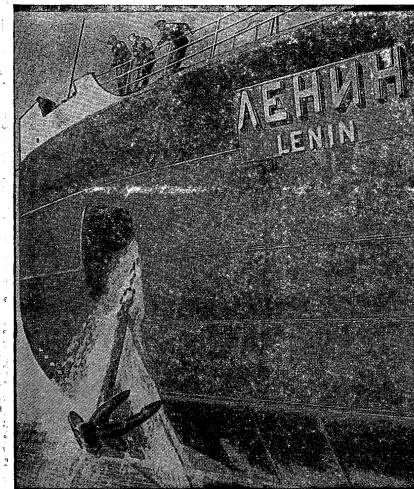
Last fall (1960) the ice-breaker «Lenin» finished its first voyage over the Northern Sea Route. This voyage, which lasted 100 days, demonstrated that all scientific and technological ideas embodied in the ice-breaker «Lenin» have justified themselves. The ice-breaker made on seas 20,000 miles, of which 9,000 miles in heavy ice fields. It paved the way in the Arctic for scores of cargo ships.

«Truly new times have come to us here in the Arctic», is how the Arctic Fleet sailors appraised the results of «Lenin» first journey.

F. A. Ponomarev, the ice-breaker's captain, has 45 years' experience of sailing in the Arctic.



The ice-breaker «Lenin» model displayed at the exhibition.

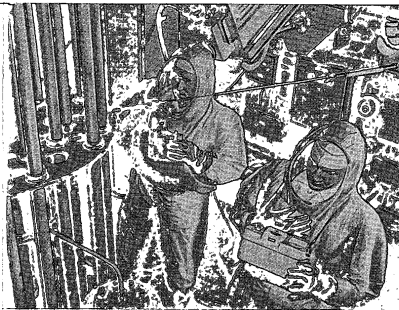


**Atomic
icebreaker
LENIN**

THE ATOMIC ICE-BREAKER «LENIN»

The world's first atomic ice-breaker «Lenin» was launched in the Soviet Union in 1957 and in 1959 it became the flagship of the Soviet Arctic fleet. It is designed for piloting cargo ship carevans along the Northern Sea Route and for conducting scientific research in the Arctic seas.

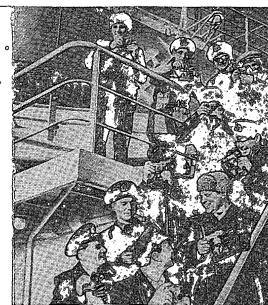
The all-metal hull of the ice-breaker is made of special high-grade steel. The strength and the design of the hull provides security for the ice-breaker operation in the severe conditions of the Arctic.



THE ADVANTAGES OF ATOMIC ENERGY

The high power capacity of nuclear fuel enables the ship to increase considerably its navigation time, without entering some port for refuelling. This is extremely important for ice-breakers sailing in the huge ice fields of the Arctic, where supplying of the usual fuel is difficult and, at times, impossible.

The high power level of the atomic power plant enables the ice-breaker to develop 44,000 h.p. sufficient to break heavy ice fields up to 10 ft thick.



THE ATOMIC POWER PLANT

The ice-breaker is equipped with three pressurized water reactors in which water acts as a coolant and a moderator, and the enriched uranium as nuclear fuel.

The water of the first circuit circulates through the reactor core. Passing through heat to the steam generators it surrounds the heat to the water of the second circuit and then returns to the reactor. The steam generated in the second circuit enters turbo-generators, which supply electricity to satisfy all needs of the autonomous ice-breaker.

The radiation level of the atomic plant in all work premises and in living quarters does not exceed that of the natural background, inasmuch as the atomic equipment is surrounded by a heavy biological shielding.

The ice-breaker's working and living conditions are absolutely safe for human health.

Special filters and purifying plants provide complete safety aboard the ship.



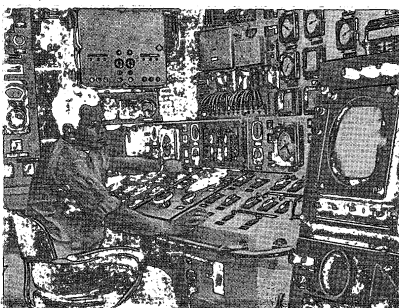
The general layout of ship's premises ensures their convenient exploitation and good living conditions for the crew. For their comfort they have single-berth and two-berth cabins with such conveniences as air conditioning and day light lamps.

Apart from the dining and ward-rooms the ship has a club, a reading-room, a library, smoking and musical saloons.

Medical services include X-ray, dental and physio-therapeutical cabinets, a pharmacy shop, laboratory and a clinic.

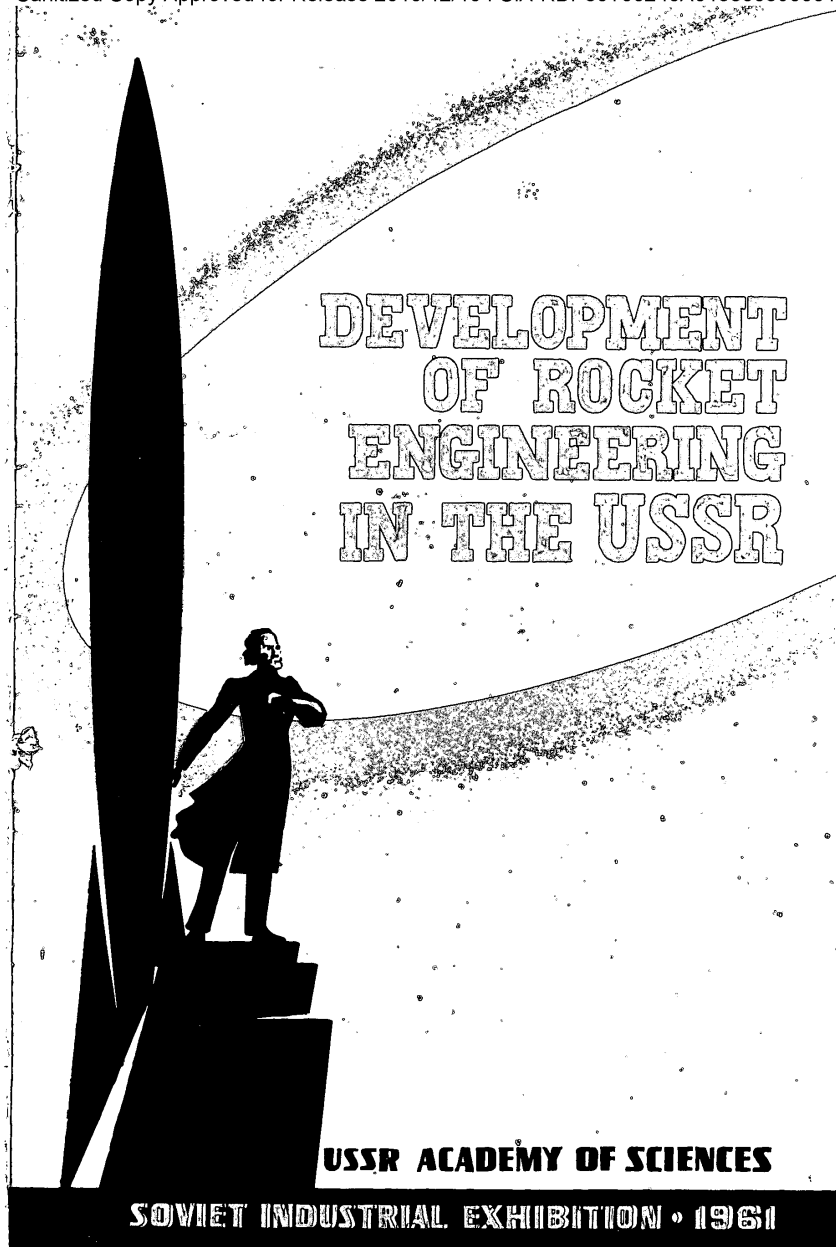


Besides propelling the ice-breaker (by rotating screw shaft motors) and instilling life in its machinery and mechanisms, the atomic power plant provides the light, heats the ship, sterilizes instruments in the surgical room, ensures radio communication, etc.



THE MAIN CHARACTERISTICS OF ICE-BREAKER «LENIN»

Displacement	13,000 metric tons
Length o. a.	140 feet
Breadth	90 1/2 feet
Machinery:	S.H.P. 44,000
Number of reactors	3
Number of steam turbines	4
Specific power (S.H.P. to displacement ratio)	2.75 HPE
Number of screws	3
Speed of rotation: middle screw	185 rpm
side screws	205 rpm
Weight of the nuclear power plant (including biological shielding—1950 lb)	3017 : 880 lbs
Steam output	310° C
Steam conditions: temperature	28 lb/cm²
pressure	90,000 kw
Thermal power of each reactor	3.3 feet
Core diameter	3 feet
Core height	3 feet
fuel	sintered UO ₂ (with 5% U-235 enrichment)
U-235 loading	85 mg
fuel element cladding	zirconium alloy



DEVELOPMENT
OF ROCKET
ENGINEERING
IN THE USSR

USSR ACADEMY OF SCIENCES

SOVIET INDUSTRIAL EXHIBITION • 1961

Our contemporaries are witnessing a wonderful time the beginning of a new era, the epoch of conquering space. The rapid development of science and engineering has enabled man to take a glance beyond the Earth's atmosphere, and the day is not far off when first astronauts will fly to other planets. K. E. Tsiolkovsky's prophetic words have come true. As early as at the beginning of the century he said: «Mankind will not remain on Earth forever; in the chase after Light and Space, it will first penetrate timidly beyond the atmosphere and then conquer for itself all the space around the Sun».

Principles of jet propulsion has been known to man for a long time. It is one of the fields of engineering which was substantiated theoretically many centuries after its practical application had begun. The first mention of powder rockets for fireworks was made in Chinese manuscripts, and dates to the II—III millennium B. C. Later on, powder rockets were used by the Chinese as a weapon. Long before our era, powder rockets were likewise known in India and in Ancient Greece.

West European countries became familiar with powder rockets at a much later period. In 1421, the Germans used incendiary rockets against Hussites, but subsequently rocket weapons were forgotten by Europeans. At the end of the XVIII century, during the war in India, the British for the first time came across this new kind of weapon. Particular interest in powder rockets was displayed by Colonel William Congreve who improved the powder rocket, after which it was adopted as armament of the British Navy and Army. During the war against Napoleon, the British used powder rockets to burn the ports of Boulogne (1806) and Copenhagen (1807).

Soon powder rockets found wide application in every European army. But as groove-artillery developed, interest in rockets diminished.

DEVELOPMENT OF POWDER ROCKETS IN RUSSIA

It may be assumed that rockets became known in Russia as far back as the X century, and yet official documents date them to the beginning of the XVII century.

A detailed description of powder rockets was given in «Manual of war, artillery and other items relevant to military sciences», written by an artillery expert Onisim Mikhailov in 1607—1621.

Powder rockets found wide application in Russia at the end of the XVII century. In 1680, a «Rocket establishment» was opened in Moscow, where powder rockets were made on a large scale. Peter I gave serious attention to powder rockets. By his order, powder rockets were adopted by the Army as signal means. Peter's signal rocket of the 1771 model was used by the Army for nearly two centuries. In the XVIII century, powder rockets were widely used in Russia in besieging fortresses and in the Navy. Laun-

chers designed by A. P. Demidov appeared, intended for the simultaneous firing of five rockets.

A valuable contribution to the development of Russian rockets was made by the leading artillerymen of the XIX century, A. D. Zasyadko and K. I. Konstantinov.

A. D. Zasyadko (1779—1837) a general of the Suvorov school, was one of the most experienced and broadly educated artillery experts of the time. Being an ardent enthusiast of the rocket weapon, he pointed on many occasions to the necessity of improving powder rockets. But the tsarist government gave him no support. However, the indifference of tsarist officials did not frustrate A. D. Zasyadko's efforts. He sold his estate and used the funds so obtained for research and development of Russian fighting rockets. He developed incendiary and high explosive rockets of a 2, 2.5 and 4-inch calibre with a range of 1.5—3 km. He also designed a rocket launcher. A. D. Zasyadko's rockets were first used in the battles during the Russo-Turkish War (1828—1829).

A further step in improving powder rockets was made by K. I. Konstantinov, an outstanding experimenter and inventor (1819—1871). Not only was he engaged in perfecting rockets, but he was also the first to elaborate the problems of rocket dynamics and to systematize the experience accumulated in the production of powder rockets. K. I. Konstantinov set up a laboratory which studied the internal and external ballistics of solid-propellant rockets. Between 1844 and 1853 he invented a number of ingenious devices for investigating the processes occurring during the burning of powder mixtures in rocket motors: a device for determining initial velocity, an electroballistic appliance and a rocket ballistic pendulum.

The numerous experiments and theoretical studies enabled Konstantinov to start a new field of science — rocket ballistics. The new theory of powder rockets made it possible to design a rocket, based on scientific calculations and observations. Konstantinov made a valuable contribution to the development of rockets: he simplified the configuration of the case, devised an advanced aerodynamic shape of the rocket, discovered new powder rocket mixtures and designed a light and convenient rocket launcher. These improvements made the rockets more effective. The range of flight of Konstantinov's rockets reached 4 km. In 1862, he developed a two-chamber rocket whose range exceeded one and a half times that of the best models abroad. It is to Konstantinov's great credit that he unified the types of rockets, which made it possible to start their mass-scale production. K. I. Konstantinov's activities in the field of powder rockets were crowned by his comprehensive work «Battle Rockets», which appeared in 1864. After his death the interest in powder rockets was weakening due to the progress in groove artillery.

Till the end of the XIX century, the history of powder rockets in Russia as well as in other countries was closely related to their application for military purposes: a rocket was regarded as a weapon. Only some cases are known from history when attempts were made to use powder rockets for the construction of flying vehicles.

In 1881, the well-known Russian revolutionary N. I. Kibalchich (1835—1881) was the first to suggest the idea that man can fly by means of a vehicle with a powder rocket. While being charged with an attempt on the life of tsar Alexander II and imprisoned in the Petropavlovsk fortress, Kibalchich developed a design of a flying vehicle in which the reactive force was used when the gases resulting from the combustion of powder candles exhausted through a nozzle. According to Kibalchich's idea, the

OUTSTANDING SCIENTISTS OF RUSSIAN ROCKET ENGINEERING



A. D. Zasyadko (1779—1837)



K. I. Konstantinov (1818—1871)



N. I. Kibalchich (1835—1881)



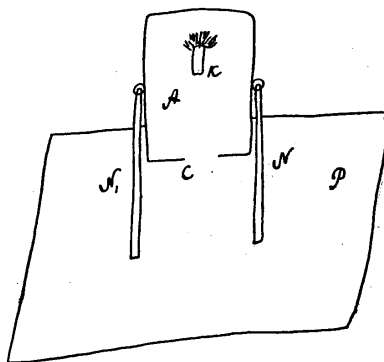
K. E. Tsiolkovsky (1857—1935)



Y. V. Kondratyuk (1900—1941)



F. A. Tsander (1887—1933)

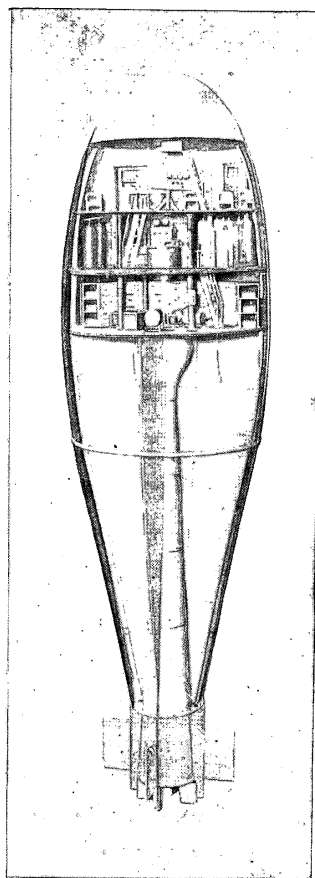


The scheme of the reactive flying vehicle (A drawing by N. I. Kibalchich).
 «Into cylinder A which in its lower bottom has an aperture C is introduced a powder candle K nearer to the upper part ...By means of bars N, N1 cylinder A is fixed to the midpoint of platform P where the aeronaut is to stand»

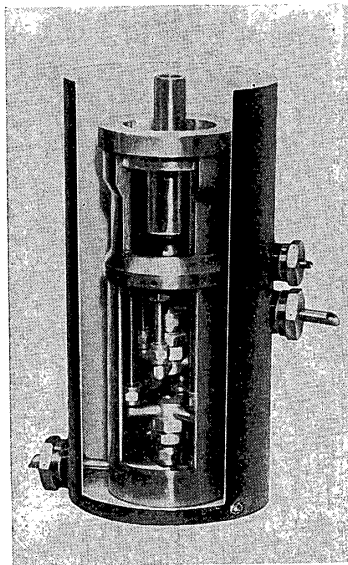
candles are continuously fed to the combustion chamber by a clockwork. In flight the control of the vehicle is effected by changing the attitude of its rocket motor. Stability of flight is achieved by the centre of aerodynamic pressure being set below the vehicle gravity centre. The tsarist government did not appreciate the true value of the suggestion made by the outstanding inventor. By court verdict N. I. Kibalchich was executed on April 3, 1881. A few days before his death he wrote: «...I trust that my idea is feasible and this faith encourages me in my horrible condition. If my idea, after being studied by scientists, will be recognized feasible, I shall be happy to have rendered a great service to Motherland and mankind. Then I shall calmly face death, knowing that my idea will not perish together with me, but it will exist in mankind for which I have been willing to sacrifice my life». The project of the renowned inventor was buried in the archives of the gendarme department and was first published in full as late as 1918.

But it was K. E. Tsiolkovsky (1857—1935), the scientist of genius, who foresaw the possibility of interplanetary flights of man. In his work «Investigation of Cosmic Space by Rocket Devices», published in 1903, K. E. Tsiolkovsky presented a theory of rocket flight and proved the possible use of rocket vehicles for space travels. In elaborating these problems, he calculated the differential equation of the rocket velocity as a function of the gas exhaust velocity from the nozzle and of the fuel change. This function has become known in science as Tsiolkovsky's law.

K. E. Tsiolkovsky also worked at the design of a rocket. He was the first to devise a fundamental scheme of a liquid propellant rocket, to outline possible combinations of propellants, to develop system of jet vanes and to suggest the solution of a number of problems arising in the designing of a spaceship. The ideas of space flights held a place of special importance in Tsiolkovsky's works. He evolved the theory and dynamics of rocket flight to prove that interplanetary flights are possible. His works outlined the concrete stages and methods of conquering space.



Model of Tsolkovsky's liquid-propellant rocket



Experimental rocket engine OPM-1

The most important of these are: designing artificial Earth satellites as intermediate stations for flights to other planets; developing nuclear rocket engines; setting up hothouses in the space vehicle for growing vegetables during flight; development of composite space rockets and rocket trains to achieve high space velocities; elaborating methods of decelerating and landing vehicles on the Earth and other planets, etc.

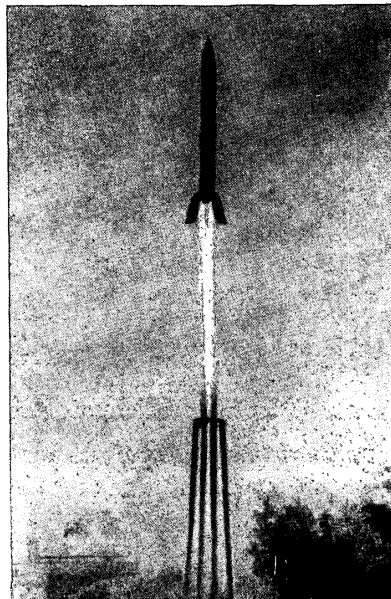
Tsiolkovsky's ideas attracted the attention of many foreign scientists. A number of investigators appeared in France (R. Esnault-Pelterie), Germany (H. Obert) and the USA (R. Goddard), who likewise devoted their research to developing the principles of rocket motion. However Tsiolkovsky's priority in this field won universal recognition. In September 1929, Professor H. Obert wrote to Tsiolkovsky: «I hope that you will live to see the realization of your lofty goals... You have lit up our road and we shall work on until mankind's greatest dream has come true». On the occasion of Tsiolkovsky's 75th birthday, the Verein für Raumschiffahrt (German Society for Space Travels) sent him the following official greetings: «Since the day of its foundation, the Society has always considered you, dear Mr. Tsiolkovsky, as one of its spiritual leaders and has never missed the occasion to point orally and in the press to your great merits and to your unquestionable Russian priority in scientifically developing our great idea». Tsiolkovsky's works helped to educate a galaxy of successors to his ideas.

Included among Tsiolkovsky's closest followers were Y. V. Kondratyuk and F. A. Tsander.

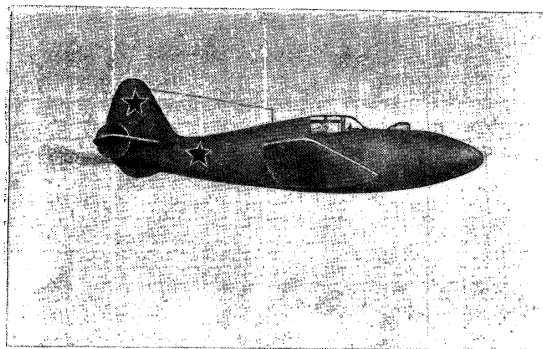
Y. V. Kondratyuk (1900—1941) was a gifted self-educated mechanic and the author of many articles and investigations on rocket engineering, collected in the book «Conquering Interplanetary Space» (1929). He occupies a place of prominence among the founders of the theory of rocket propulsion and interplanetary flights. He advanced the idea of raising the efficiency of rocket fuels (the use of ozone as an oxidizer), of designing winged rockets, etc. He also proved that it was possible to fly in space by means of composite rockets and that it was impossible to fly beyond the Earth's gravitation field by means of conventional single-stage rocket. Kondratyuk's works are of great value and are those of the classics on rocket engineering.

F. A. Tsander (1887—1933) was a leading engineer, enthusiastic about rocket motion. He developed not only the theory of rockets, but also started building rocket engines and rocket vehicles.

Late in 1920 he reported on his project of an interplanetary plane to the province conference of inventors in Moscow. In 1924 he published his first article entitled «Flights to other planets» in the magazine «Technique and Life». Later his other works



Take-off of the first Soviet liquid-propellant rocket on August 17, 1933



First Soviet rocket plane in flight

appeared: «The problem of flights by means of rocket vehicles» (1932) and «Description of an interplanetary ship of Tsander's design» (1937).

In 1931, Tsander took an active part in organizing the «Rocket Propulsion Study Group» (ГРПД) and began working there. Since then he wholly devoted his efforts to developing the ideas of interplanetary flights. As far back as 1929, Tsander built a model of the OP-1 rocket engine with a thrust of 5 kg. In 1932—1933, the Group built and conducted static test firings of a more advanced rocket engine, OP-2, designed by Tsander which developed a 100 kg thrust. The inventor paid great attention to the choice of rocket fuel. It was his idea to use metals and, notably, the material of rocket vehicle waste parts as high-energy fuels. Proceeding from this, Tsander designed rocket engines with thrusts up to 5000 kg.

In 1933, F. A. Tsander elaborated a design of a rocket operating on liquid propellants, but he did not manage to realize it. On March 28, 1933, he died.

Subsequently Tsander's colleagues of the Group built a rocket according to Tsander's design. It was named «ГРПД-X» and passed flight tests.

FIRST SOVIET ROCKET ENGINES AND LIQUID-PROPELLANT ROCKETS

In the early thirties the Soviet Union began the building of the first experimental rocket engines. In 1929, the first OPM-1 experimental rocket engine was created, which operated on petrol and liquid oxygen or liquid nitrogen tetroxide and developed a thrust up to 20 kg.

At this period there appeared some laboratories and societies uniting the enthusiasts of rocket engineering. In 1932, some groups were organized in Moscow and Leningrad to study rocket propulsion. The groups studied the theoretical and practical problems related to rocket engineering.

On August 17, 1933, the Moscow group launched the first Soviet rocket. The engine operated on liquid oxygen and gelatinized petrol. The rocket had the following specification: length — 2457 mm; diameter — 175 mm; launching weight — 18 kg; thrust — 65 kg; engine operation time — 12.5 sec.

The Leningrad group was engaged in developing more powerful engines suitable for practical use. For instance, the OPM-50 experimental rocket engine (1933) operated on kerosene and nitric acid and developed a thrust of 100 kg.

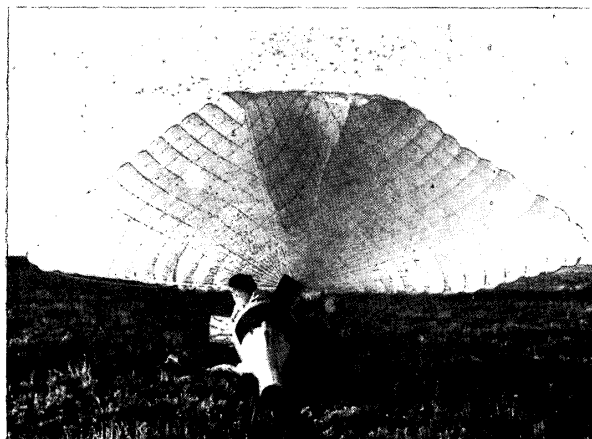
In 1934, a supersonic wind tunnel with air heating was built first in the world. In 1936, an engine 12/K was designed, running on alcohol and liquid oxygen. The engine was equipped with a jet spraying injector. Heat-resistant materials were used in manufacturing the combustion chamber of the engine. With its own weight amounting to 12 kg, the engine developed a thrust of 300 kg. On April 5, 1936, rocket 05 propelled by this engine was launched.

The parameters of rocket 05 are as follows: length—3225 mm; diameter of the body—300 mm; launching weight—89 kg; thrust—205 kg. maximum altitude—2400 m.

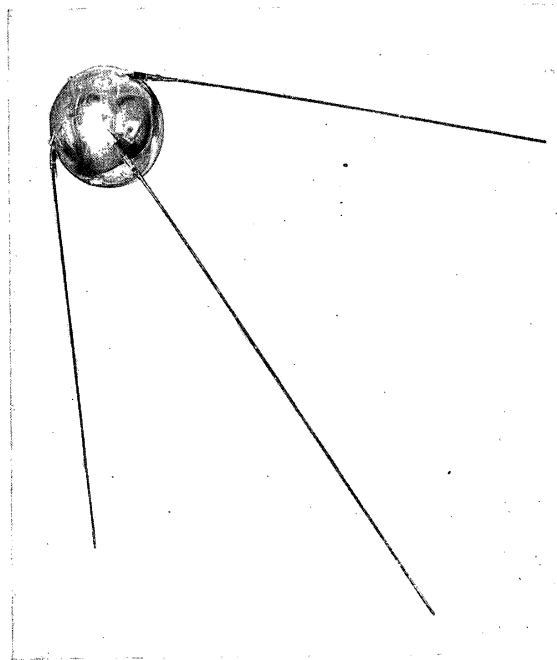
In 1939, tests were completed of winged rocket 212 equipped with an OPM-65 engine developing a thrust of 175 kg. The rocket had a self-starting system and an autonomous automatic control system. The winged rocket was launched by means of a rocket dolly, propelled by a solid-propellant rocket plant. The range of the rocket flight amounted to 50 km.

Between 1933 and 1946, over 12 types of stratospheric rockets were developed. Within the same period research was carried on to design a rocket engine for aircrafts. On February 28, 1940, the flight took place of the first Soviet rocket glider, PII-318. It was furnished with a liquid-propellant rocket engine running on kerosene and nitric acid.

The specifications of the glider are: length—7.28 m; wing span—17 m; initial flying weight—700 kg.



Landing of A-1 Soviet geophysical rocket



First artificial Earth satellite, Sputnik 1, (launched on October 4, 1957)

The specifications of the engine are: maximum thrust — 140 kg; combustion chamber pressure — 18 atm; weight of rocket unit (without fuel) — 100 kg. The engine was placed in the tail section of the glider. It was manually controlled from the pilot's cabin and was started after the glider had been towed by an airplane, when the glider flew unaided. In horizontal flight the rocket glider reached a speed of 200 km/hr. The PII-318 rocket glider was piloted by the test-flyer V. P. Fyodorov.

The test of the Soviet rocket airplane began on May 15, 1943. The airplane was piloted by the test G. Y. Bakhehivanji.

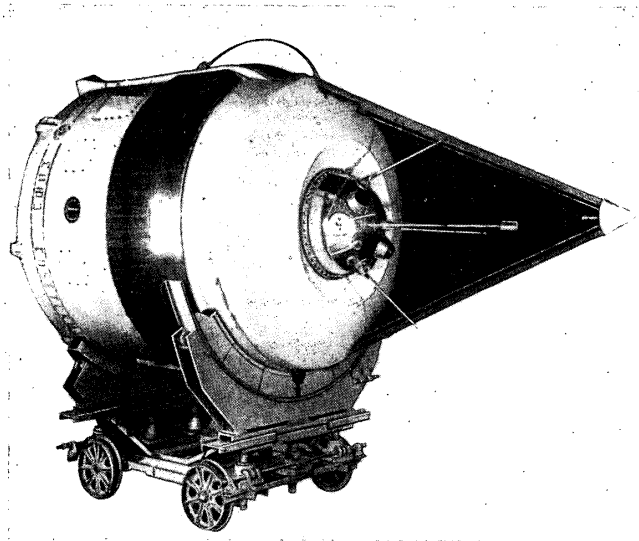
Thus, the rocket engine gradually penetrated into various branches of engineering: aircraft rocket engines were designed, attempts were made to set rockets on automobiles, boats, etc. In World War II rockets found wide application as a weapon. Rocket engineering had made great strides by the end of the war with the development of powerful liquid-propellant missiles.

Liquid-propellant rockets became a new effective means of studying the upper layers of the atmosphere and of outer space.

SPACE EXPLORATIONS BY ROCKETS IN THE USSR

Regular explorations of the upper atmosphere have been carried out in the Soviet Union since 1949 by means of meteorological and geophysical rockets. In May, 1949, the first A-1 Soviet geophysical rocket was launched up to an altitude of 110 km. The weight of the scientific equipment in the first rockets amounted to 85-130 kg. Subsequently, the rockets of this type carried scientific equipment weighing as much as 1150 kg. In May, 1957, an A-2 geophysical rocket was launched to an altitude of 212 km. The weight of the scientific equipment in the A-2 rocket amounted to 2200 kg. In addition to scientific measurements the geophysical rockets were used for medical and biological research. There worked out a parachute system which ensured test animals and equipment recovery.

The year of 1958 marked new achievements in this field. On February 21, 1958, a more powerful single-stage geophysical rocket of the A-3 type was launched. The rocket with the scientific equipment totalling the weight of 1520 kg reached an altitude of 473 km which was a record for that time. Subsequently a series of such rockets were launched. To develop various systems of attitude control with reference to the Earth and the Sun, rockets of the A-4 type were launched in the Soviet Union. These had spherical containers ejected during the flight, in which the scientific equipment and



Last stage of the first Soviet space rocket «Mечта» (Dream) (launched on January 2, 1959) mounted on a handling dolly. In section the spherical instrument container with the equipment is visible

measuring instruments were placed. The scientific equipment weighed 374 *kg*. The rockets of the A-4 type rose to an altitude of 103 *km*.

During the International Geophysical Year the world witnessed an unprecedented triumph of Soviet science and engineering. On October 4, 1957, an artificial Earth satellite, Sputnik I, was launched by the Soviet Union, the first in the century-old history of mankind. A month later, on November 3, 1957, a second advanced satellite, Sputnik II, was launched. Apart from the scientific equipment and measuring instruments, Sputnik II had on board the dog Laika which was the first animal to be placed into orbit around the Earth. Soviet Sputnik III weighing over 1327 *kg* was launched on May 15, 1958.

All in all, 125 research rockets and three Sputniks were launched in the Soviet Union in accordance with the International Geophysical Year programme. They helped to carry out the planned programme of exploring the upper atmosphere and the outer space near the Earth.

Studies of interplanetary matter and of the Moon were the next stage of scientific research.

On January 2, 1959, the Soviet Union launched the first space rocket, called «Mечта» (Dream), or else Lunik I. The rocket passed in immediate proximity to the Moon at a distance of 5000 + 6000 *km* from its surface and entered a heliocentric orbit of its own, thus becoming an artificial planet of the solar system. The scientific measurements taken by means of the instruments installed in the rocket supplied new data on space physics, on the composition of the interplanetary matter gas component, primary cosmic radiation, the Earth and the Moon's magnetic fields, etc.

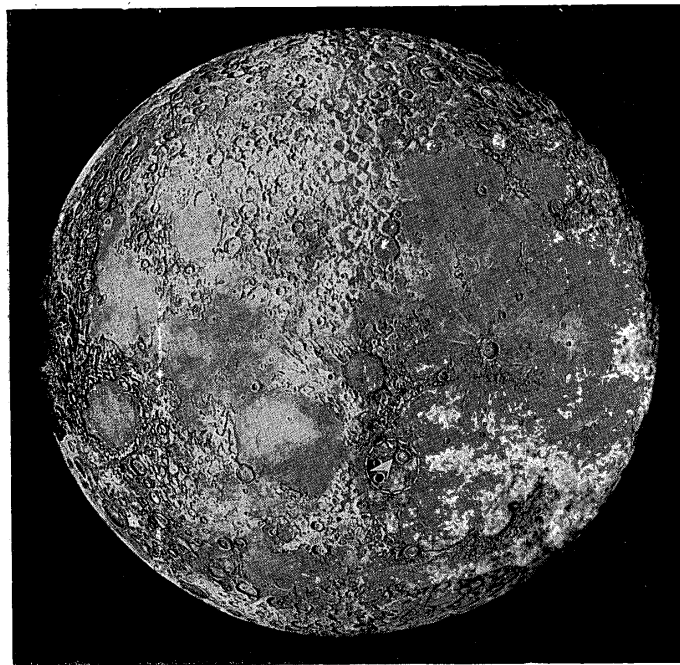
On September 12, 1959, a second Soviet space rocket (Lunik II) was launched which hit the Moon in accordance with the programme of scientific investigations. For the first time an object made by man reached another celestial body.

On October 4, 1959, a third space rocket (Lunik III) was launched, which brought an automatic space station into an orbit around the Moon and the Earth. With the aid of photo and TV systems, the reverse side of the Moon, invisible from the Earth, was photographed. New names of mountains, craters and «seas» appeared on the map of the Moon. Soviet scientists made a most valuable contribution to world science.

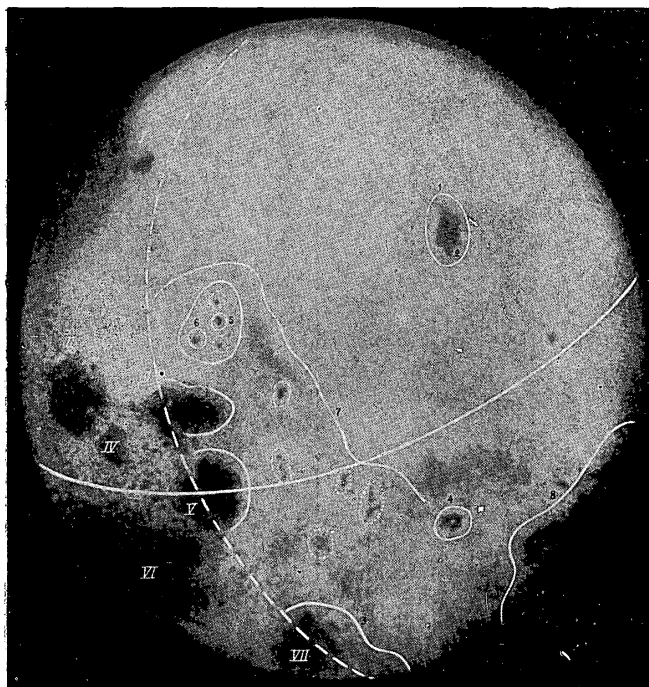
A serious study of Mars and Venus, our space neighbours, also forms part of the space research programme conducted by Soviet scientists.

On February 12, 1961, an automatic space station was successfully launched towards Venus. A heavy Sputnik was placed into an orbit around the Earth, from which a controlled space rocket was launched. The rocket injected into a trajectory toward Venus an automatic station with scientific equipment weighing 643.5 *kg*, which is to reach the vicinity of Venus in the middle of May 1961.

The investigation of space, however, with the aid of automatic stations and without direct participation of man cannot supply science with exhaustive information. The mastering of space without man's emergence beyond the Earth's atmosphere is also impossible. That is why for several years the Soviet scientists and engineers carried out preparations for manned space flight. Five Soviet sputnik spaceships launched between May 1960 and March 1961 made possible the solution of problems in creating an apparatus for manned space flights round the Earth. The problems of maintaining the vital functions in such a flight, the landing systems, communication and many other pro-



Area where the second Soviet space rocket (Lunik II) impacted on the Moon (September, 14, 1959)

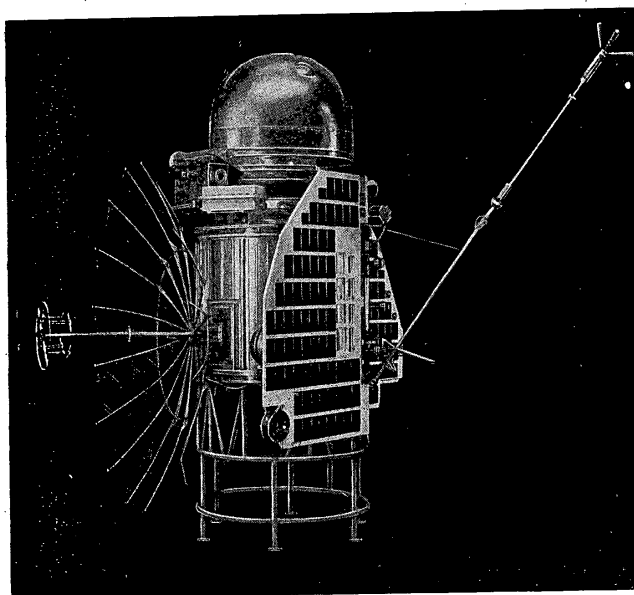


Distribution of objects on the part of the Moon unseen from the Earth which were discovered at the preliminary processing of the photographs transmitted by the automatic interplanetary station:

1 — the great crater sea 300 km in diameter — the Moscow Sea; 2 — the Astronauts Bay in the Moscow Sea; 3 — continuation of the Southern Sea on the opposite side of the Moon; 4 — a crater with a center mountain is the Lomonosov Crater; 5 — the Joliot-Curie Crater; 6 — the Soviet Mountain Chain; 7 — the Dream Sea

Continuous line crossing the scheme is the Moon equator; dotted line is the boundary dividing the seen and unseen parts of the Moon. The continuous lines surrounding the objects mark those which are determined for sure during the preliminary processing; dotted lines encircling the objects mark those which are requiring more exact shape making; points encircle the objects the classification of which is being defined more accurately; the rest part of the Moon according to the obtained photographs being further processed

Rome figures mark the objects on the seen part of the Moon: I — the Humboldt Sea; II — the Sea of Crises; III — the Regional Sea which is continued on the unseen part of the Moon; IV — the Sea of Waves; V — the Smith Sea which has continuation on the unseen part of the Moon; VI — the Sea of Fertility; VII — the Southern Sea has its continuation on the unseen part of the Moon



The general view of the automatic interplanetary station launched to Venus on February 12, 1961 (on a mounting support).

blems were also solved. Complex and laborious work of many scientists and engineers brought brilliant results which allowed the first manned flight into space.

On April 12, 1961 the world's first sputnik spaceship, «Vostok», with a man on board was placed in orbit around the earth.

The space pilot of the «Vostok» spaceship was a citizen of the Soviet Union — Air Force Major Gagarin Yuri Alexyevich.

The ever first flight of a man in space was a success. The earth orbited and the predetermined programme completed, the «Vostok» spaceship landed safely in the pre-established area in the Soviet Union.

The results of the scientific explorations obtained by Soviet scientists and the outstanding achievements in the field of rocket engineering testify to the fact that our contemporaries will witness a new era of interplanetary flights which were the dream of the best sons of mankind.

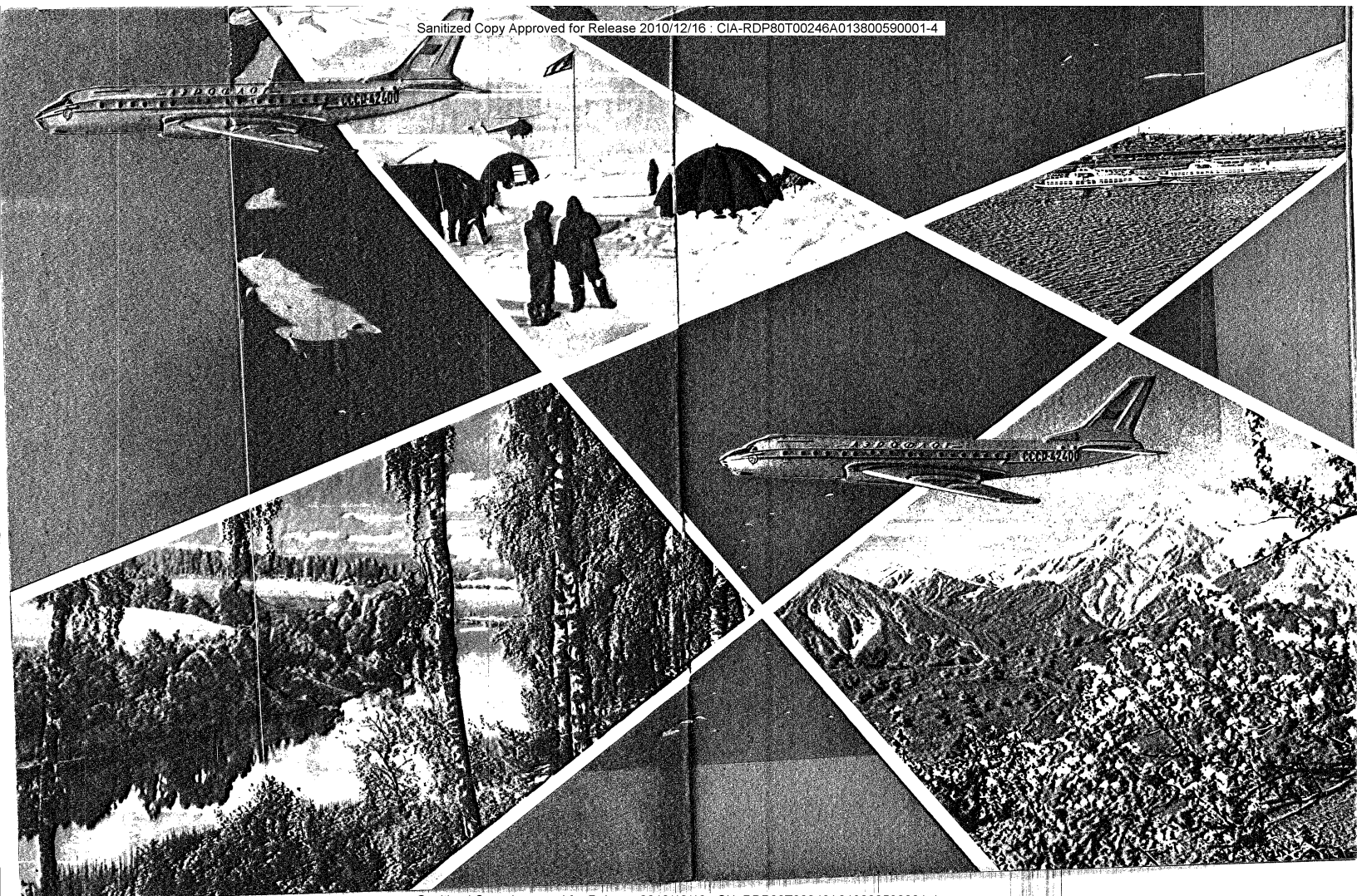
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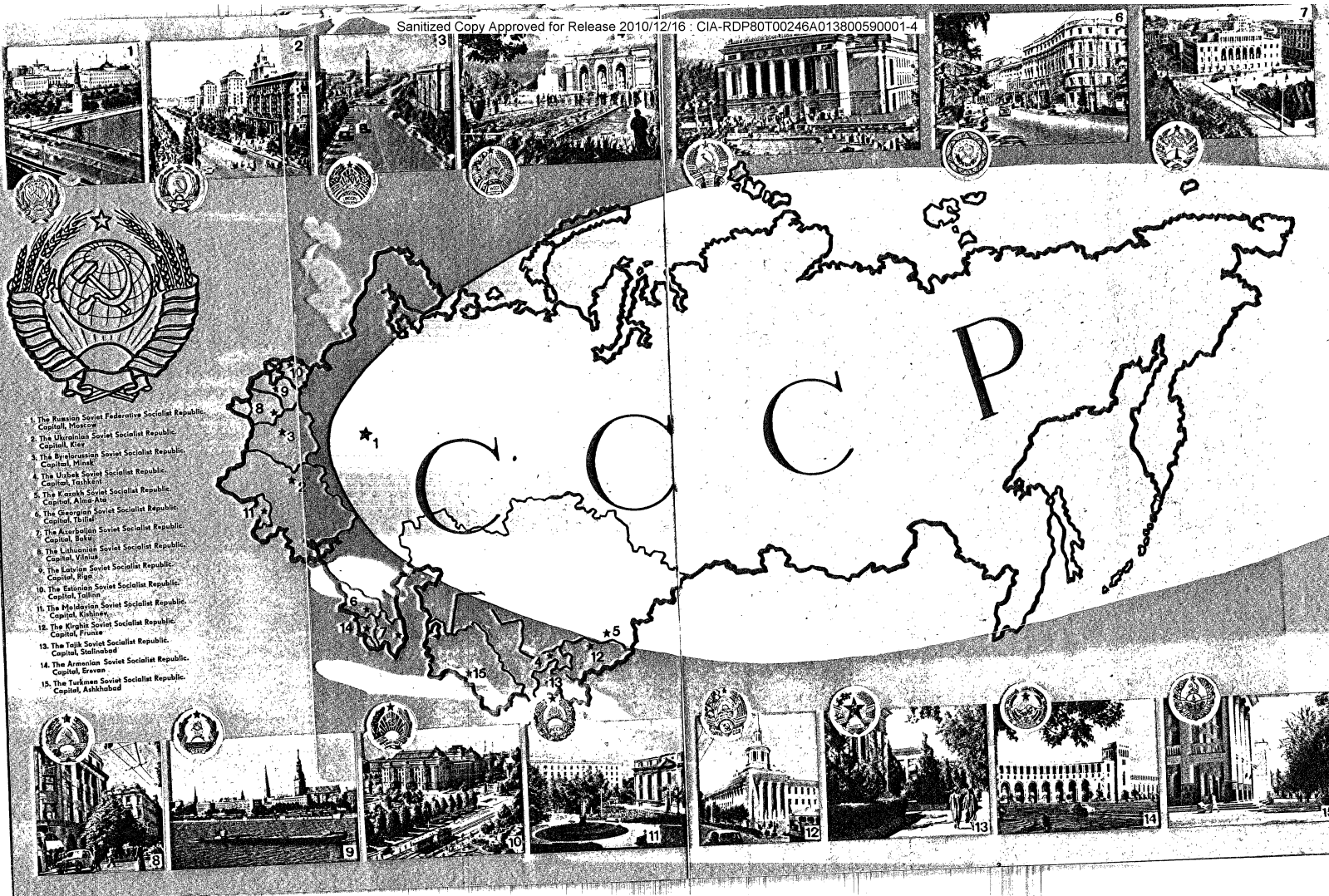
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This illustrated booklet gives only the most general information about the Soviet Union. It is intended for people who wish to have some information on questions not clear to them concerning the Soviet Union or who are trying to discover how people live there today.

The Soviet people are proud of what they have succeeded in doing over a short period of history. No less typical of them is another feeling—their concern about the future. Soviet people are not accustomed to settling down with the achievements of yesterday; their thoughts are always turned to the future. Soviet society never ceases to improve itself. If this were not so, the economy, culture and science of the U.S.S.R. would not develop at such a rate.

Man has always had a tremendous desire to create things, and no difficulties have ever existed which refused to retreat before him. Soviet people have something in addition to this natural quality, something that increases their energy tenfold. They live in a socialist state and are the sole masters of the country's wealth.

To conclude our preface we have this to say: everything the Soviet Union possesses today is the result of its peaceful, creative labour. For the Soviet Union peace is the guiding principle of life and the basis of its relations with all peoples and countries, irrespective of the state structure of those countries and of the political convictions of their citizens.

In recent years the Soviet Union has taken numerous steps towards the peaceful settlement of urgent international problems, the relaxation on this basis of international tension and the creation of conditions for lasting peace in the world.

Soviet people have always attached particularly great

importance to the problem of disarmament, including the question of stopping the testing of nuclear weapons and banning them. They are convinced that in our day disarmament is the only measure that will make possible the exclusion of wars from the life of man.

The Soviet Union's peace proposals are backed up by concrete action. More and more Soviet soldiers are returning to peaceful civilian work. In the period 1955-58, 2,140,000 men were demobilised from the army. For a long time now not one Soviet military base has existed on foreign territory. Without waiting for international agreement on disarmament, the Soviet Government adopted another decision in January 1960 to reduce its armed forces by one-third, i.e., by 1,200,000 men.

The U.S.S.R. has proposed to the Western powers to compete with it in the matter of disarmament, the development of peaceful economy, science and culture, improvements in the well-being of their peoples, and assistance to the peoples of the underdeveloped countries.

There are no sections of the population in Soviet society which stand to gain anything from war. The people working in industry and agriculture are striving to produce an abundance of material and spiritual values in the shortest space of time, to raise still higher the living standards of the people. The Soviet people have every possibility in their country of achieving these aims.

"We in the Soviet Union possess everything we need," N. S. Khrushchev has rightly stated. "We have a rich country and a prosperous economy. We are seeking to raise the living standards of our people to a high level. Our prospects are exceptionally bright. We need nothing from other nations, except friendship."

One-Sixth

On the Map. You will easily find the Soviet Union on the map of the world. It covers an area of 22,400,000 square kilometres—one-sixth of the world's land. This is half the whole of Europe and one-third of Asia. Cape Chelyuskin (the northernmost point of the country's mainland) lies 5,000 kilometres from Kuskka, the southernmost town on the borders of Afghanistan. The distance between the west and east frontiers of the U.S.S.R. is almost twice as much. When the first rays of the sun appear over Chukotka, the evening sun is setting over the towns of the Baltic Republics.

One and a Half Times the Equator. The state frontiers of the U.S.S.R. are more than 60,000 kilometres long, i.e., one and a half times as long as the equator. Twelve states border on the Soviet Union.

Twelve seas, all parts of the Arctic, Atlantic and Pacific oceans, wash the coastline of the U.S.S.R. over a length of 43,000 kilometres.

The country has mountain ranges and endless expanses of lowlands, an area of eternal frost and an evergreen (the tropical zone). It has an extremely varied flora with 17,000-18,000 species of plants. The animal world is also richly represented, there being more than 100,000 species of animals, from the tiger to the polar bear.

Hydropower Resources. There are 150,000 rivers, large and small, in the U.S.S.R. The basins and lengths of some of them (the Lena, Ob, Yenisei, Amur and Volga) are among the largest in the world. The power resources of the rivers exceed the whole of the power resources of the United States, Canada, Brazil, Argentina, Norway, Sweden, Switzerland and France, taken together.

Large canals have been built in the U.S.S.R. which link up all the seas of the European part of the country.

One of them connects the White Sea and the Baltic, the Moscow Canal links the Moskva and Volga rivers, and the Volga-Don Canal joins the Volga with the Don. Although Moscow lies hundreds of kilometres away from any sea, it has now become a port for five seas: the White Sea, the Baltic, the Caspian, the Sea of Azov and the Black Sea.

The Earth's Storehouses. In the depths of the country everything can be found to satisfy man's requirements. It is hard to imagine what treasures are stored in the ancient Ural Mountains, where more than 12,000 mineral deposits have been discovered.

Three hundred thousand engineering geologists, technicians and workers are engaged in the search into nature's treasures. Their discoveries have altered all existing ideas about the total world reserves of treasures contained in the bowels of the earth. The diamonds of Yakutia, the copper, lead, zinc and nickel of Kazakhstan, the new areas of oil between the Urals and the Volga, the deposits of natural gas in Central Asia, the North Caucasus and other areas are all fruits of their persistent efforts.

The U.S.S.R. occupies a leading position in the world for the size of its discovered reserves of coal and oil, iron, manganese and wolfram ores, copper, lead, zinc, nickel, bauxites, potassium salts, phosphates and several other minerals. It has numerous gold deposits, and the silver and molybdenum reserves are very considerable.

The U.S.S.R. has very rich expanses of land. In the main, all agricultural crops can be grown here, with the exception of those which need a great deal of warmth.

The country's forests cover an area of more than seven million square kilometres.

Sitting of the U.S.S.R. Supreme Soviet at the Grand Kremlin Palace



The Soviet State

October 1917. The Soviet state was born in October 1917, on the day when the socialist revolution took place in Russia. It is hard to overestimate the importance of this event. The ideas of October won the support of millions of people because they brought them freedom and happiness.

For the first time in history working people – the workers and peasants – are in power. In consequence not only has Russia's political system altered, but the country's entire economy has been radically reconstructed. One of the first of the Soviet Government's decrees immediately abolished private ownership of the land, without compensation to the landlords, and transferred it for use in perpetuity to those who cultivated it. What millions of peasants had dreamed about and fought for for centuries came to pass.

At the same time the Soviet state nationalised the banks, railways, merchant fleet and, a little later, the whole of large-scale industry. The people became the undivided owners of the country's wealth.

All this offered the widest opportunity for rapidly developing industry, transport and agriculture, increasing the wealth of society, fairly distributing the wealth created, raising the material and cultural standards of the working people, and for genuinely developing the human personality.

It has made particular progress in space exploration. It was the first in the world to launch a man-made satellite of the earth, send its pennant to the moon, fire living creatures into outer space and bring them safely back to earth, and accomplish a manned space flight. On April 12 1961 Yuri Gagarin, a Soviet citizen, orbited the earth in the spaceship Vostok and came safely back.

Soviet man ushered in the era of space flight; thus furnishing evidence of the unlimited possibilities socialism provides for scientific and technological progress and for man's mastery of the forces of nature.

The Soviets. In the U.S.S.R. the people rule the country through the Soviets of Working People's Deputies. All the power of the state in the U.S.S.R. is in the hands of the Soviets, from the local Soviets in the towns and villages to the highest organ, the Supreme Soviet of the U.S.S.R. All the state organs derive their powers from the Soviets and are controlled by them.

The Soviets are mass organisations. They have a total of 1,800,000 deputies. Each deputy is in close contact with his electors and periodically renders an account of his work to them. If he does not justify the high confidence placed in him, he can be recalled by the people who elected him before the expiry of his term of office as deputy.

Apart from the deputies, more than 2,500,000 men and women take an active part in the work of the Soviets as members of permanent committees set up by them.

The Supreme Soviet is the highest organ of state power in the U.S.S.R. It is elected for a term of four years. Among the deputies there are men and women of different nationalities, young people and representatives of the older generation. Out of the 1,218 deputies (in the 1963 elections), 831 are workers and peasants (614 of whom work directly in production), the rest are scientists and authors, doctors and engineers, agronomists and artists, social workers and trade-union officials and members of the Soviet armed forces.

The Supreme Soviet of the U.S.S.R. consists of two chambers having equal rights – the Soviet of the Union

and the Soviet of Nationalities; thus, the structure of the Supreme Soviet itself reflects two important aspects of Soviet democracy – the equality of all citizens and the equal rights of all nationalities, great and small. The Soviet of the Union is elected on the basis of the administrative areas in the proportion of one deputy for every 300,000 of the population. Each Union Republic elects 25 deputies to the Soviet of Nationalities, each Autonomous Republic – 11, each Autonomous Region – 5, and each National Area – 1 deputy.

The Soviet of Nationalities is necessary because of the multi-national composition of the country's population. The task of this Soviet is to ensure that every nationality in the U.S.S.R. has an opportunity of directly expressing its national interests in the Supreme Soviet.

The sessions of the two chambers are held simultaneously. The Supreme Soviet adopts the plans for the development of economy and also the U.S.S.R. Budget; it exercises legislative power and has the right to put forward amendments to the Constitution. It forms the Government of the U.S.S.R. (the Council of Ministers), elects the Supreme Court and appoints the General Prosecutor.

The Union Republics. The population of the U.S.S.R. which is over 216,000,000 is formed of more than 100 peoples and nationalities, large and small in number. The numerically largest nation, of more than 114,000,000, is the Russian, while in the Caucasus there are nationalities of only a few hundred people.

All forms, even the slightest, of discrimination against or inequality of nations were long ago abolished in the U.S.S.R. During the earliest days of Soviet power, in November 1917, Lenin signed the Declaration of the Rights of the Peoples of Russia, which abolished all forms of national superiority and all restrictions. The right to self-determination for every nation, and also the right to form an independent state, was recognised.

Today the U.S.S.R. consists of 15 Union Republics: the Russian Soviet Federative Socialist Republic (R.S.F.S.R.), the Ukrainian, Byelorussian, Uzbek, Kazakh, Georgian, Azerbaijan, Lithuanian, Moldavian, Latvian, Kirghiz, Tajik, Armenian, Turkmen and Estonian Soviet Socialist Republics. Each of them, irrespective of size of population, territorial area and economic strength, enjoys equal rights with the rest of the republics. For example, although the Armenian S.S.R. is almost 570 times smaller in territory and has a population 96 times smaller than the R.S.F.S.R. they both enjoy completely equal rights.

Each Republic elects an equal number of deputies to the Soviet of Nationalities of the Supreme Soviet of the U.S.S.R. Any Republic may demand the convening of an Extraordinary Session of the Supreme Soviet or call for a referendum on a national scale. One representative of each Republic is a member of the Presidium of the Supreme Soviet. The Council of Ministers and the Supreme Court of the U.S.S.R. include respectively the Chairmen of the Councils of Ministers and Supreme Courts of all the Union Republics, with full rights.

Every Union Republic has its own Constitution which reflects the characteristic features of the life of its people, its own citizenship, its own Supreme Soviet and Government (the Council of Ministers), its own national anthem, emblem and flag. The Union Republics direct the development of their own economy. Each of them has the right to maintain its own armed forces and to enter into direct relations with foreign powers. Byelorussia and the

Ukraine are not only members, but founder members of the United Nations Organisation.

Besides the indigenous nationality, there are other peoples living on the territories of some of the Union Republics. Some of these peoples have their own distinctive features of everyday life and a homogeneous national composition, and have therefore established their own national states within the Union Republics and enjoy autonomous rights. A people which forms its own Autonomous Republic enjoys the rights of state self-administration on its own territory. There are 19 Autonomous Republics (in 1960) in the U.S.S.R., Autonomous Regions (of which there are 9) and National Areas (of which there are 10) form yet another kind of autonomy.

The Rights of Citizens. People living in the U.S.S.R. enjoy the broadest democratic rights. The Constitution guarantees every person the right to work, leisure, material security in old age and when disabled, the right to education and to form social organisations. All citizens enjoy freedom of speech, press, assembly and public meeting, street processions and demonstrations. They have complete freedom both of religious worship and of conducting anti-religious propaganda. All this holds good in actual fact, in living practice.

Every citizen is guaranteed work, receives free education and free, extensive medical attention. In old age or incapacitation the state provides a pension (without any preliminary deductions from wages). The people take an active part in the country's social life. The Government has granted the people full use of the finest buildings and halls for holding assemblies, meetings and conferences, and provided printing presses, stocks of paper and radio stations.

Equal Rights for Women are guaranteed throughout the country because of the whole system of life. Women equally with men enjoy the right to work, to payment for work, to leisure, social insurance, medical attention and education.

The socialist state protects the interests of mother and child, gives assistance to mothers of large families and to unmarried mothers; affords women about four months' leave of absence from work with wages during pregnancy and after child-birth and gives opportunities for the use, free of charge, of the services of maternity homes and women's and children's consultation centres. Kindergartens and crèches are available for mothers. The charge for their services is extremely small, since these institutions are chiefly maintained by the state.

All this and numerous other day-to-day services naturally give the Soviet woman free time to develop and make the widest use of her abilities, to play an important part in social life. It is no accident, for example, that more than one-third of the deputies to the Supreme Soviet of the U.S.S.R., to the Supreme Soviets of the Union and Autonomous Republics and to the local Soviets are women.

The Helmsman of Soviet Society. The guiding centre of all the country's social and state organisations is the Communist Party of the Soviet Union (C.P.S.U.). The Party is a voluntary, militant association of Communists holding identical views, an association of the finest representatives of the working people. It consists of about 9,000,000 members.

The Party, which was founded by V. I. Lenin over half a century ago, has travelled a long road of heroic struggle to achieve well-being and happiness for the people and to

improve their standard of living. By its irreproachable, self-sacrificing service to society it has won the full confidence and support of all working people. Under its leadership the peoples of the U.S.S.R. have achieved socialist industrialisation and the reconstruction of the countryside, a cultural revolution, and have built socialism. With the Communists leading them, the Soviet people won a historic victory on the battlefields of the Patriotic War against fascist Germany and her allies. The Party was the organising force which directed the energies of millions of people working to restore the towns and villages, factories and workshops that were destroyed in the cruelest of wars history has ever known.

Today, under the leadership of the C.P.S.U., the new communist society is being built in the U.S.S.R., a society that will provide for all the material and spiritual needs of man.

The Largest Mass Organisation of the Working People. Various organisations of the working people play an important part in the social life of the country: the All-Union Leninist Young Communist League, the U.S.S.R. Committee of Youth Organisations, the Soviet Women's Committee, the Soviet Peace Committee, the creative unions of the artists, journalists, writers, cinematograph workers and composers and many other societies of all kinds.

The trade unions are the largest mass organisation of the working people. They have a total membership of over 55,000,000, which is almost all the workers and other employees in the country.

In conditions where the working people control all the industrial enterprises and are the masters in the land, the production interests of the state administration which, in effect, consists of the authorised representatives of the people, coincide with those of the trade unions. It is in the interests of the trade unions and the administration alike to fulfil state plans and to develop production, since increases in the country's wealth go hand in hand with increases in the material well-being of the workers and other employees.

The trade-union committees represent the workers and other employees on all labour questions; they conclude collective agreements with the administration, assist in drafting the production plans of the industrial enterprises. The trade unions are responsible for state supervision over the observance of labour legislation and public control over labour protection. Tariff rates, new output quotas and systems of wage payment are established only with the agreement of the trade-union committees. These committees investigate labour disputes on complaint by the workers and their decisions are binding on the administration. Should the administration refuse to carry out such a decision, its implementation can be compulsorily enforced. Without the consent of the trade-union organisation, no worker or other employee can be dismissed from his work.

The Soviet trade unions have large material resources at their disposal. In 1959 their budget exceeded 730 million rubles*. In addition, they have complete control over the social insurance funds, which are allocated entirely from the State Budget. And these funds are tremendously large in 1960 they reached the figure of 7,000 million rubles.

* The figures are based on the new ruble exchange rate introduced in the U.S.S.R. on January 1, 1961 in connection with the alteration in the scale of prices, i.e. the tenfold reduction in all prices and payments. Thus one new ruble equals 10 old rubles. The gold content of the Soviet ruble, as from January 1, 1961, is 0.357412 grams of pure gold. Under the new rate of exchange one U.S. dollar equals 0.50 ruble.



N. S. Khrushchev and the Soviet flyer Yuri Gagarin, the world's first cosmonaut,

greet the working people of Moscow during a demonstration in Red Square on May 1, 1961

lion rubles. They are used entirely to satisfy the most varied needs of the working people.

The trade unions participate in the allocation of housing, control the work of the communal canteens and shops, organise summer holidays for children. In 1959 the trade unions were responsible for almost 19,000 clubs, homes and palaces of culture, as well as more than 26,000 libraries.

Social Self-Administration. As Soviet society develops the role of the social organisations correspondingly in-

creases. A number of functions of the state apparatus are gradually passing into their hands.

The increased role and strength of the trade unions, for example, have made it possible to transfer to their administration functions of the state organs relating to certain questions of cultural services for the working people. All the sanatoria and rest homes are now managed by the trade unions. Social bodies, and not the state, now guide the work of the sports societies with their many millions of members.

Social organisations have also begun to undertake the

work of maintaining order, side by side with the militia, procurator's offices and the courts. The apparatus of the militia and state security organs has been considerably reduced. People's volunteer detachments for the maintenance of public order and comrades' courts have been established at factories, offices and at the house-manager's offices. Moral persuasion and social education are chiefly applied in the work of these organisations.

The creative hand of the Soviet people is seen in the industrial, social and cultural spheres of life. Since 1958, for example, universities of culture have been established in response to suggestions from the people themselves.

Land and metallurgical workers, miners and textile workers, people of the most varied occupations attend these universities in their leisure hours; they study painting and music, literature and theatre. Prominent public figures, writers, theatrical workers, artists, composers and others assist the people's universities (of which there were nearly 4,000 in 1960 with one million people attending them).

The emergence of the people's theatres is the new trend in the cultural life of the U.S.S.R. Amateur art activities flourish alongside the professional arts and involve more than seven million people.

The Inheritance from Old Russia. It is hard to realise that only a few decades ago Russia produced less than three per cent of the total industrial output of the world. In her economic development she lagged 50-100 years behind the U.S.A., Germany and Britain.

Only a few industrial areas were scattered among the fields and forests like oases in a desert. Russia had to buy all her machine-tools and equipment, her coal and phosphate fertilisers and even building materials. Foreign entrepreneurs owned many large factories and orefields, coalmines and railways.

This was the inheritance that came to the young Soviet Republic in October 1917.

An Industrial Power. Just as the foundations of a building give it stability and strength, so, in a large country, heavy industry is the foundation for developing all the industry and agriculture and improving living standards, the foundation which makes the country independent.

The Soviet people laid down this foundation; they built a mighty power, metallurgical and machine-tool basis for their economy. The Soviet Union today produces the most up-to-date cars and huge high-speed air liners, tractors and combine-harvesters, wireless and television sets, electric locomotives, gigantic turbogenerators, as well as the most up-to-date automatic lathes, electronic computers and atomic reactors.

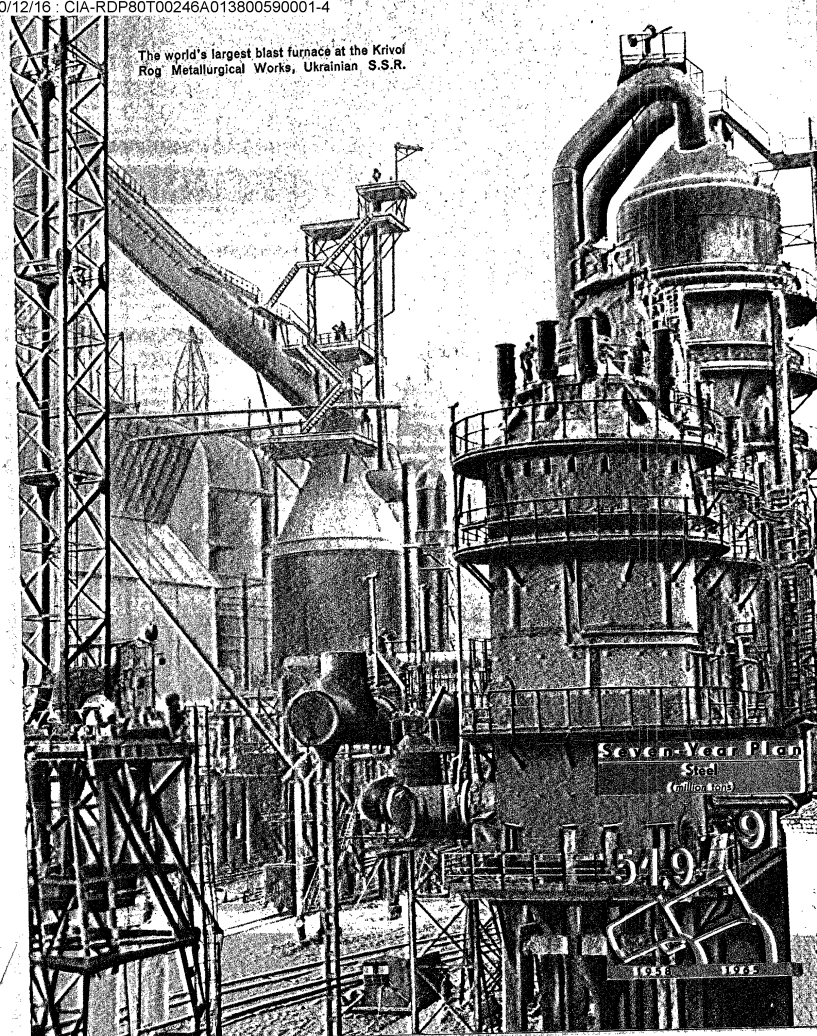
With the active support of the Russian and, later, of the other Soviet peoples, many nations and nationalities of the U.S.S.R., in only two or three decades, have travelled a road of development which, in different conditions, would have required whole centuries. Today, for example, Uzbekistan, Kirghizia, Turkmenia and Tajikistan produce more than 60 times as much output as in 1913. Kazakhstan, only recently a backward country, now produces as much industrial output per head of population as is produced in Italy.

A special feature of the socialist system of economy is the high rate of development, which is considerably higher than that of capitalist economy.

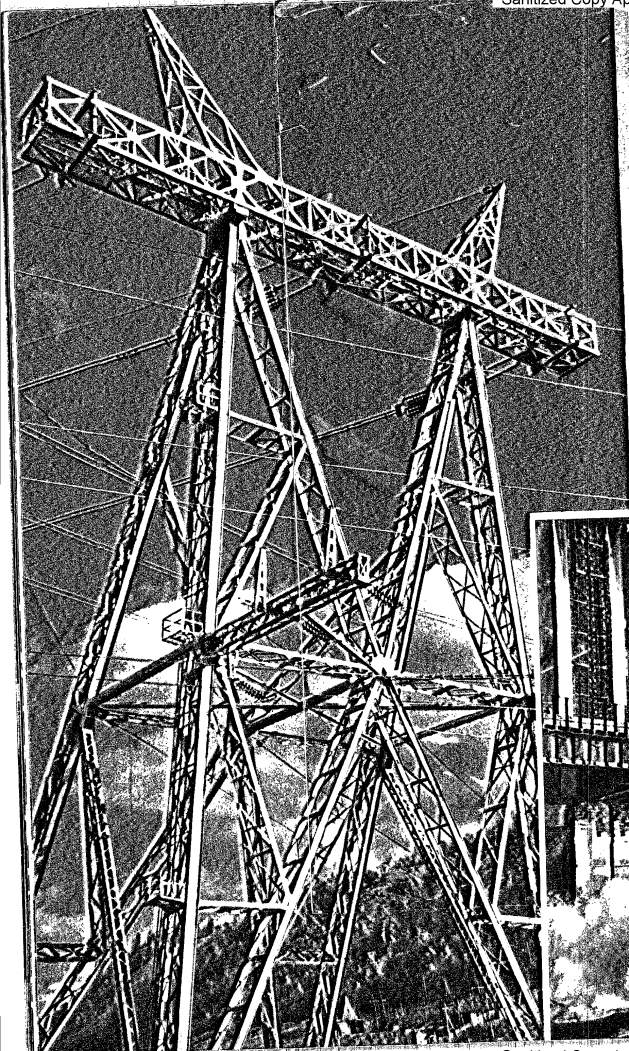
Here are a few examples. In 1960 labour productivity in Soviet industry increased more than 11 times as compared with 1913, due to the mechanisation and automation on a broad scale and the rise in the technical skill of the workers themselves. Today the U.S.S.R. has passed the level of labour productivity in Britain and France and has considerably closed the gap separating it from the level of labour productivity in the U.S.A.

In the U.S.S.R., the average annual increase of industrial output during forty-two years (1918-59) was 10.1 per cent, whereas in America it was only 3.3 per cent; during the last six years (1954-59) the corresponding figures were 11.3 per cent and 2.4 per cent. Between 1913 and 1959 the entire industrial output in the U.S.S.R. increased 40-fold, and in the U.S.A. only 5-fold.

The world's largest blast furnace at the Krivoy Rog Metallurgical Works, Ukrainian S.S.R.



The Country's Economy

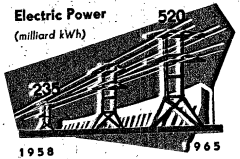


During its economic development the U.S.S.R. has rapidly surpassed one country after another. Whereas in 1913 tsarist Russia occupied fifth place in the world for her volume of industrial output, the Soviet Union is now second after the U.S.A., while for coal and iron extraction and the output of woollen textiles and sugar it occupies first place in the world. Soviet industry now produces more than Britain, France and West Germany together. The Soviet Union produces almost 20 per cent of the world's total industrial output.

The Soviet Union considers it its duty to give economic aid to the peoples of those countries which have only recently taken the road of independent development. It is helping them to build up their industry, to train their own experts, to develop agriculture and, on that basis, to improve the living conditions of their population. The reason the Soviet people give this aid is not because they have surplus resources which they cannot use in their own country. It is because they know from their own experience how difficult it is for the economy of a country to be raised without aid from other countries, and so they sincerely desire to help the peoples of those countries to get rid as quickly as possible of backwardness and poverty, this burdensome inheritance from colonial rule, and to secure a life worthy of man.

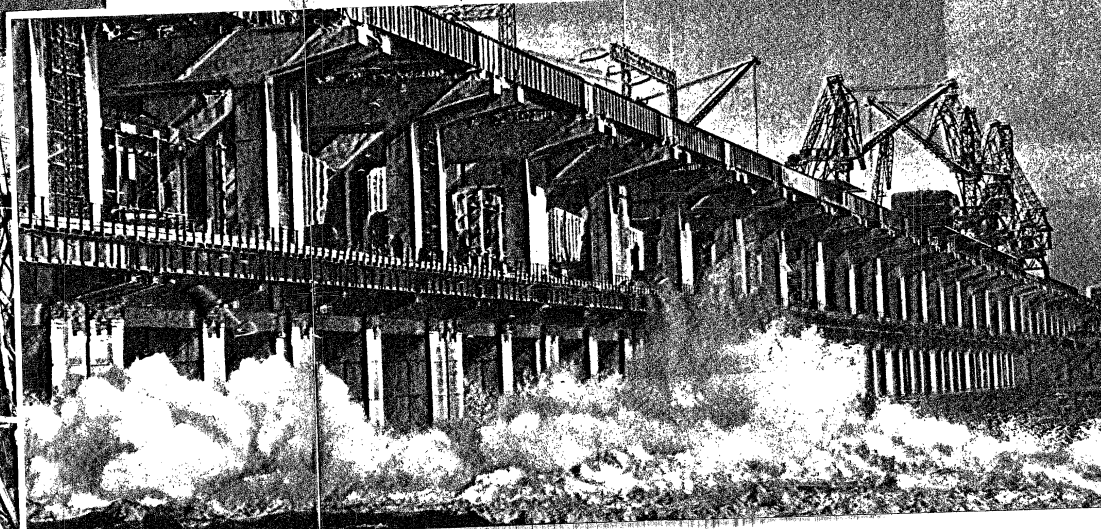
At present the U.S.S.R. is trading on terms of mutual advantage with more than 70 countries. The wide assortment of goods the U.S.S.R. can export and the interest it has in acquiring many goods from abroad create favourable conditions for developing trade relations with any country in the world.

Seven-Year Plan



Soviet industry will reach a still higher level after the fulfilment of the present Seven-Year Plan. The plan provides for an 80 per cent increase in industrial output in 1965 as compared with 1958. In 1965, for example, heavy industry will put out every two days machine-tools equal to the total annual output of tsarist Russia in 1913. The output of electric power and oil will more than double and that of gas will increase fivefold. Thousands of new enterprises will be built in all branches of industry. Among these will be the world's largest blast and open-hearth furnaces and hydropower stations like the Bratsk (4.5 million kW) and the Krasnoyarsk (5 million kW). New atomic power stations with various types of reactors, many thousands of machine-tools and mechanisms will be

The world's largest hydropower station at Stalingrad

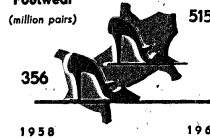




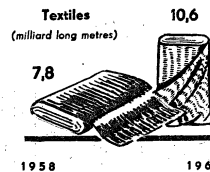
Young textile workers - innovators in production

Seven-Year Plan

Footwear
(million pairs)



Textiles
(billion long metres)



The fruits of technological progress affect every sphere of industry and, primarily, heavy industry. Today, for example, it takes only 5-6 months to erect huge open-hearth furnaces in the U.S.S.R., 8-9 months for blast furnaces and 6-8 months for complex technological lines of cement works with powerful revolving furnaces.

Another example. New machinery made it possible between the years 1951 and 1958 almost to double labour productivity at power construction sites. During the Seven-Year Plan period the Soviet Union will set in motion power capacities almost equal to those introduced in Britain, France and West Germany together during the whole of their history.

Economic Councils. More than 200,000 state industrial enterprises are working and over 100,000 building projects are in hand throughout the boundless expanses of the U.S.S.R.

How is this gigantic economic mechanism administered?

The flourishing economy of the Union Republics, the skilled manpower that has been trained for all branches of national economy, made it possible in 1957 to reorganise the system of managing industry and building projects. Economic administrative areas (over 100 of them) were set up. The majority of the previously existing industrial and building ministries were abolished, and the enterprises and building projects they administered were transferred to corresponding Economic Councils which proceeded to direct the enterprises now combined on the territorial principle. The Economic Councils, in their turn, are controlled by the Councils of Ministers of the Union Republics. The Economic Councils are under the general supervision of the Council of Ministers of the U.S.S.R. through the medium of the Councils of Ministers of the Union Republics.

The reorganisation of the industrial management gave wide scope for the initiative of the working people in every enterprise and afforded more favourable conditions for using the resources and opportunities available in each economic area.

put into operation. Automatic and complex mechanisation of production will be introduced on a wide scale.

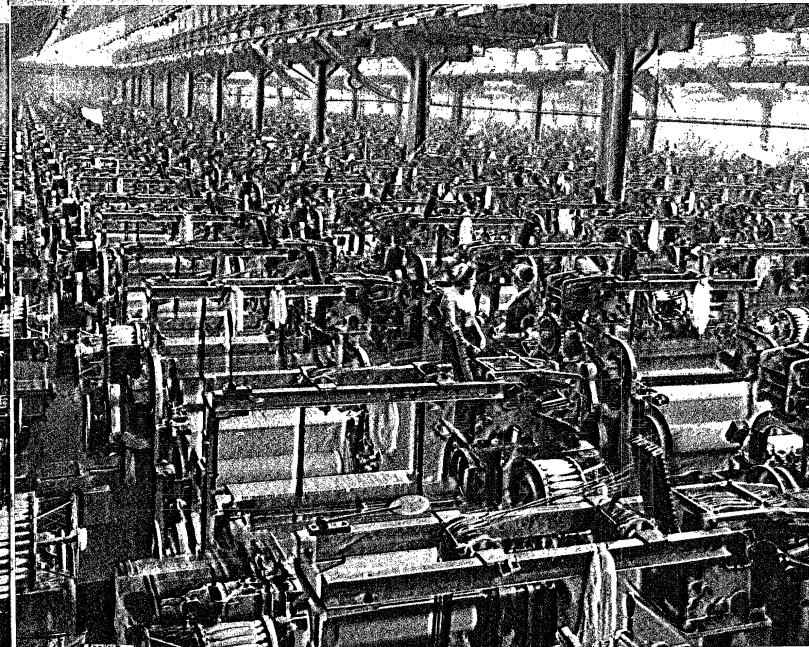
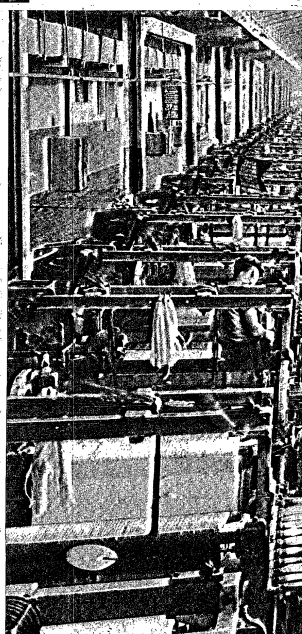
The results of the first two years of the Seven-Year Plan period definitely indicate that the Seven-Year Plan will be fulfilled ahead of schedule. For instance, the plan envisaged an increase of 17 per cent in industrial output for 1958-1960. Actually, there was an increase of 22.1 per cent.

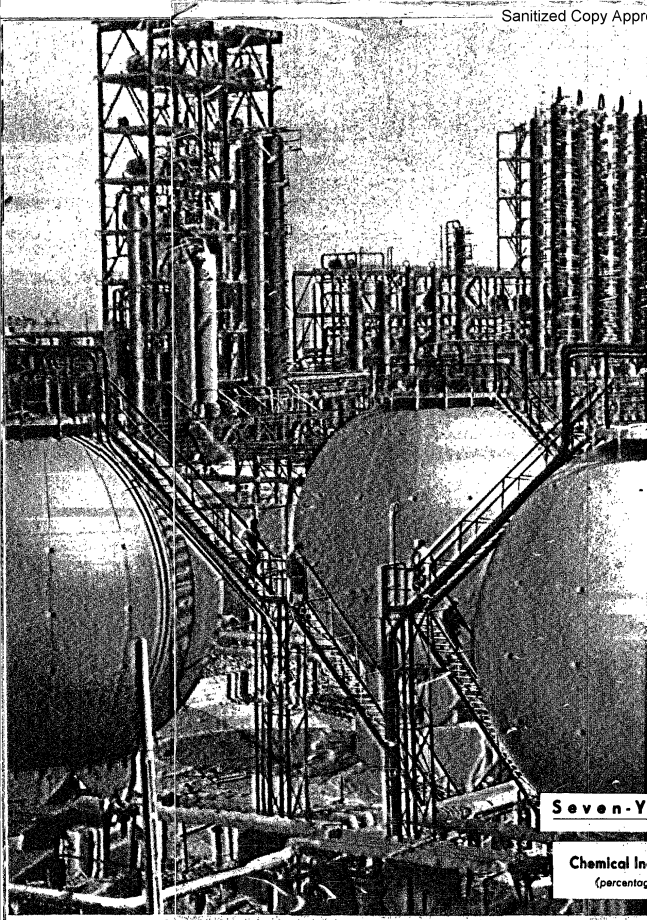
At the existing rate, the Seven-Year Plan for industry will be fulfilled in six years, and in seven years the volume of industrial output will not show an 80 per cent increase, as planned, but will be doubled.

Technological Progress. A very rapid process of complex mechanisation and automation is taking place in the national economy of the U.S.S.R. During the first two years of the Seven-Year Plan period Soviet industry produced more than 4,750 new types of machinery, machine-tools, mechanical devices and instruments, and over 2,800 even-flow, conveyor, automatic and semi-automatic lines were introduced.

Mechanisation and automation very considerably lighten the work of the people, make it more creative and, at the same time, help to solve national economy's major tasks. It seems that only a short time ago Soviet people were filled with pride because their industry was producing roto-blade 115,000 kW turbines for the hydropower stations on the Volga. But now the engineers have developed a radial-axle turbine for the Bratsk Hydropower Station which has no equal in the world. Its efficiency is 225,000 kW. The time is not far off when they will be making 500,000 kW hydroturbines.

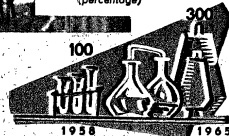
New weaving mill at Kamyslin, R.S.F.S.R.
Lines of 4,000 automatic looms





Seven-Year Plan

Chemical Industry
(percentage)

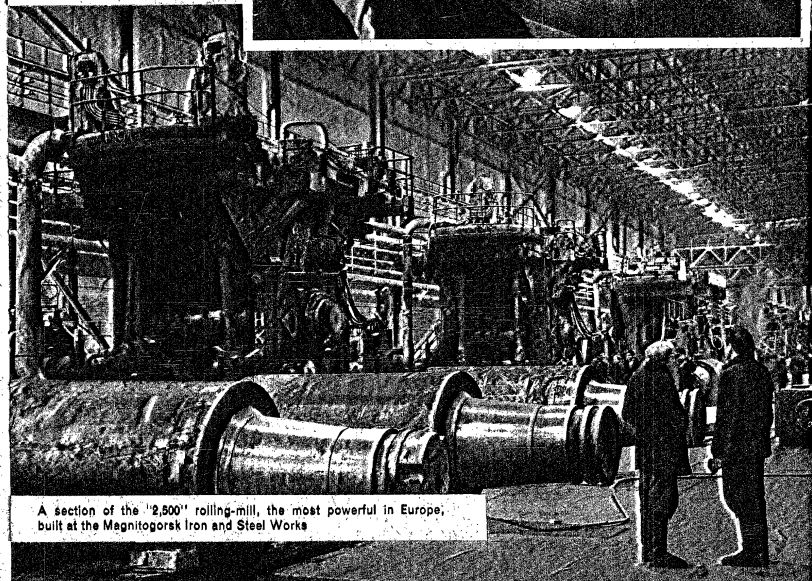
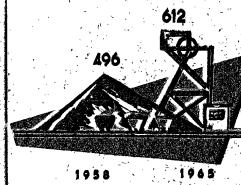


Synthetic rubber plant at Sumgait, Azerbaijan S.S.R.

Nikolai Mamel, a well-known miner and Hero of Socialist Labour, with his team-mates

Seven-Year Plan

Coal
(million tons)



A section of the '2,500' rolling-mill, the most powerful in Europe, built at the Magnitogorsk Iron and Steel Works



IL-18, a turbo-prop liner, at Vnukovo airfield, Moscow

An Economy Which Knows No Crises. The question may arise as to how the Soviet people were able in so short a time to accomplish this great leap in their development.

The explanation should be sought in the Soviet social and state system, in socialist ownership of the means of production, in the whole socialist system of national economy which is carried out on a scientific, planned basis which excludes anarchy, over-production crises and unemployment. In the U.S.S.R. everyone works to increase the wealth of the whole of society, and that means that everyone works for himself.

Of decisive importance in the economic development of the U.S.S.R. has been the fact that the Soviet people took the new road of industrialisation, the socialist road of industrialisation, which required that priority be given to the building and development of heavy industry.

But the priority development of heavy industry did not at all mean cutting down the production of consumer goods for the people. On the contrary, the light and food industries have also accomplished a huge leap forward. In 1969, 15 times as many consumer goods were produced as in 1913 in the old Russia.

Although the Soviet state still sets itself the task of rapidly developing heavy industry, the economic might of the country is now so great that it can spend more and more of its resources on the requirements of light industry and accelerated development of agriculture.

What is the source of these colossal capital investments? The funds for new investments come from the accumulated capital of the state enterprises. As the economy develops, these accumulations rapidly increase, eliminating from the Budget all other sources of revenue. At the present time, for instance, 90 per cent of all the Budget revenue in the U.S.S.R. comes from the profits of socialist economy. In the next five years - after the abolition of taxes - the accumulated capital of the socialist enterprises will be the only source of Budget revenue and capital investments.

Under the Seven-Year Plan the state's capital investments in the national economy during the period will reach the figure of about 200,000 million rubles! This is almost as much as the total amount invested in the national economy of the U.S.S.R. during 41 years of Soviet power.

For the Soviet people, the knowledge that they are the masters of their destiny is the source of their constant inspiration and of their creative attitude to labour. Every year millions of Soviet workers put forward vast numbers of rationalising proposals which aim at improving production, thus acting as inventors. In 1960 nearly 2,400,000 inventors and rationalisers put forward more than 4,000,000 suggestions. Of this number more than 2,500,000 were introduced into production. This meant an economy of over 1,400 million rubles in one year.

Prospectors of the Future. This is the name given in the U.S.S.R. to people who belong to those groups of workers in industry and agriculture which are patriotically competing for the right to be called communist-work brigades or communist-work factories. The members of this movement do their utmost to give only the highest-quality output and to overfulfill the planned production quotas. Many of them study through correspondence classes and at evening educational institutions. In their daily lives they adhere to high moral and ethical standards and develop their finest human qualities.

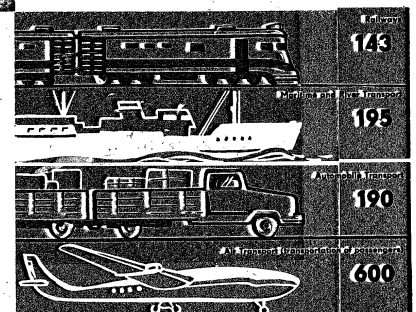
Today approximately eight million Soviet people belong to this movement. The patriotic initiative of Valentina Gaganova, a young working woman from Vysni Volochok, who is a brigade-leader in a cotton textile factory, sprang from these people. The essence of her initiative is that the leading people working in the advanced sectors should transfer their services to the more backward sectors, without material benefit but, on the contrary, at some material loss to themselves during the early stages, and, because of their experience, bring them into line with the more advanced sectors. The noble sentiments of collective work and comradely assistance form the basis of the Gaganova initiative. This mass patriotic movement for communist work will undoubtedly accelerate the development of Soviet society.

Seven-Year Plan

Freight Turnover

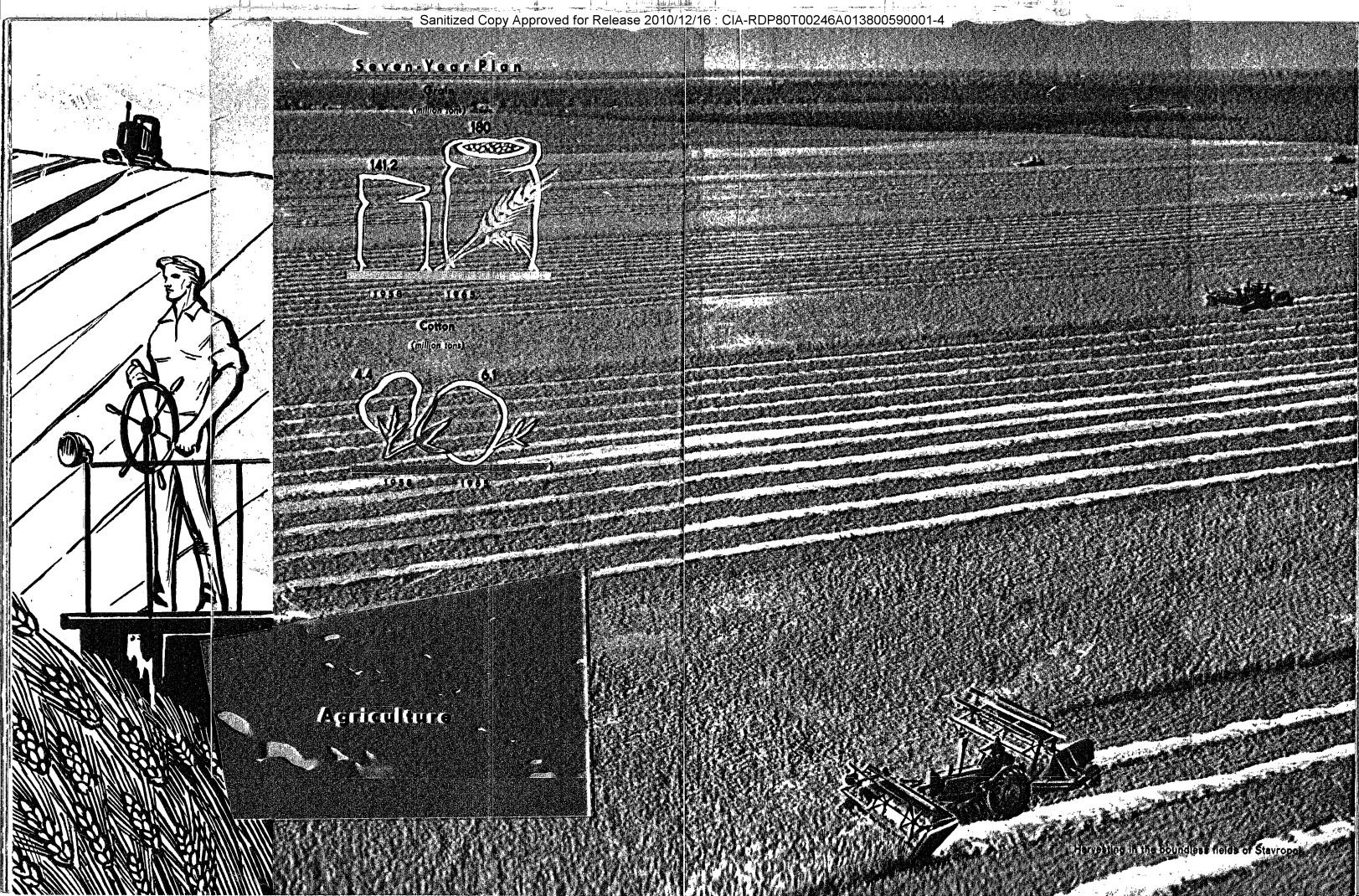
1958 = 100

1965



The basic funds of the national economy will be doubled. In the course of seven years the Soviet people will produce as much as the country has ever produced during its entire history.

The Creative Labour of the People. Everything the country has today has been created by the heroic labour of the Soviet people. Things were difficult for them at times. In the early years, they often went without essentials and worked under difficult conditions to build the industrial giants, the powerful thermo- and hydropower stations. The knowledge that the development of the national economy and culture, improvements in living standards and the fate of the new social system depended entirely on their labour inspired the people in the performance of this historic feat.



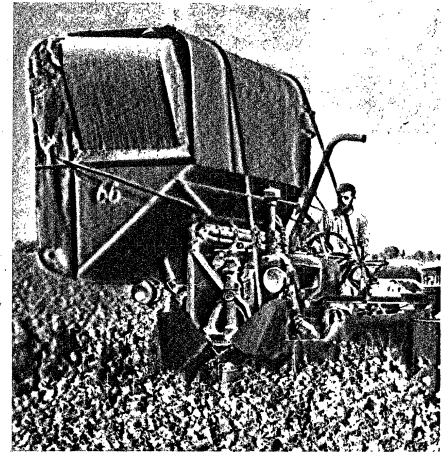
◀ This maize gladdens the heart



After being given land, the vast majority of the peasants combined together in collective farms, production co-operatives, where they work as a community, buy their machines and implements on a joint basis and receive remuneration according to the amount and quality of the work they performed. In the U.S.S.R. there are 6,500 state farms in addition to the 54,600 collective farms.

In tsarist Russia the peasants only knew the wooden plough and harrow. But in 1960, over two million tractors, 500,000 combine-harvesters and 750,000 lorries were in use in Soviet agriculture. The technical revolution in agriculture was based on the powerful heavy industry built up by the Soviet people.

Today more than 300,000 specialists with a higher or secondary specialised education are working in the collective and state farms. Millions of peasants have a general, secondary or an incomplete secondary education. The peasants rely on the day-to-day assistance given them by scientists and use advanced methods of land cultivation. New kinds of crops which are more suited to the existing natural conditions are being introduced on the broadest scale. Livestock breeds are improving. Wide use is made of new, more effective methods of feeding livestock. Every year mineral fertilisers are being applied on an increased scale.



Reaping cotton

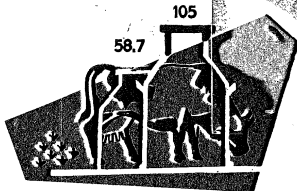
On a Siberian state farm ▶

Seven-Year Plan

Milk
(million tons)

105

58.7



1958 1965





A glimpse of the countryside

Grain economy is the basis of agricultural production in the U.S.S.R. The U.S.S.R. produces annually 4,000-4,500 million poods of wheat alone. It is far ahead of the U.S.A. in wheat production, though the U.S.A. is the largest grain producer in the world.

Compared with 1913, the production of maize, sunflowers, sugar-beet and potatoes has increased several times. The Soviet Union holds first place in the world for its yield of sugar-beet. Cotton production has increased sixfold compared with pre-revolutionary Russia and now the cotton yield is the highest in the world.

In recent years new lands have been put under cultivation on an unprecedented scale: 41 million hectares of virgin and fallow lands have been ploughed up. This exceeds the sumtotal of the areas sown to grain crops in the following nine European countries: France, Italy, the German Federal Republic, Austria, Belgium, Denmark, the Netherlands, Spain and Sweden.

The new lands have justified one hundredfold all the labour spent on working them. Here is just one example. After fulfilling the 1960 plan of grain sales to the state, the agriculture of the R.S.F.S.R. gave the country 1,801 million poods of grain. Of this, 1,089 million poods came from the areas of former virgin and fallow lands.

During the last five years the development of U.S.S.R. agriculture has been particularly great. In this period the production of marketable grain has increased on the average (compared with 1953) by more than 1,000 million poods. State purchases of milk have increased almost two and a half times, and of meat have more than doubled.

The Plenary Meeting of the C.C. C.P.S.U. held in January 1961 discussed the further development of the country's agriculture. The output of agricultural produce should be ahead of the demand of the population. The Plenary Meeting put this requirement to the people working in agriculture and livestock-breeding.

Such is the demand of the times. During the last five years, the population of the U.S.S.R. has grown by more than 18,000,000. In the same period wages have risen by 17,00 million rubles, taxes reduced by 870 million rubles and pensions increased by 4,000 million rubles. The total cash income of the population has increased by 24,200 million rubles in new money estimated for one year. The cash incomes of the rural population have also increased. This has led to a considerably greater demand for food commodities and, primarily, for meat, milk and butter.

The Decision of the Plenary Meeting states that it is possible in the U.S.S.R. to increase, over and above the figure envisaged in the Seven-Year Plan, the capital investments in agriculture and the industry serving agriculture, in the production of tractors and agricultural machinery, mineral fertilisers and building materials.

Considerably more attention will be paid to irrigation. Additional millions of hectares of land in Central Asia, the South of the Russian Federation, the Volga area, the South Ukraine, the Trans-Caucasian republics will have water and will produce cotton, rice, maize, and make possible a substantial expansion in the output of produce from live-stock breeding. Land-improvement outside the Black-Earth belt of the R.S.F.S.R., in the Western Ukraine, in the Byelorussian, Lithuanian, Latvian and Estonian republics will also extend the areas sown to grain and fodder crops and help to improve the standard of live-stock breeding.

In the very near future the U.S.S.R. will create the conditions when further development of agriculture will not depend on the vagaries of nature. Then, no matter what the meteorological conditions, the country will get the necessary amount of products to satisfy fully the people's requirements.

Culture and Science

Education for all. For a long time illiteracy has been almost completely nonexistent in the Soviet Union. Universal compulsory eight-year education has been introduced throughout the country. Millions of young people are studying in secondary schools and higher educational institutions. Very many correspondence classes, evening schools, technical colleges and institutions have been established for persons who are employed at work but who wish to continue their education. The state provides additional annual vacations with pay and also days for leave of absence from work so that these people can sit for examinations, carry on their studies during term time, or prepare theses for diplomas.

One special feature of the Soviet educational system is that every form of education is free. Moreover, the state pays a stipend to students attending secondary specialized schools or higher educational institutions and provides them with hostel accommodation.

The Soviet educational system aims at bringing education as closely as possible to daily life, organizing it so that young people will not only receive a good theoretical grounding but will also acquire definite working skills and so become better equipped for an independent life.



By the beginning of 1960/61 school year 52 million people - five times as many as before the Revolution - were studying in schools of all grades and types and at the various courses available throughout the country.

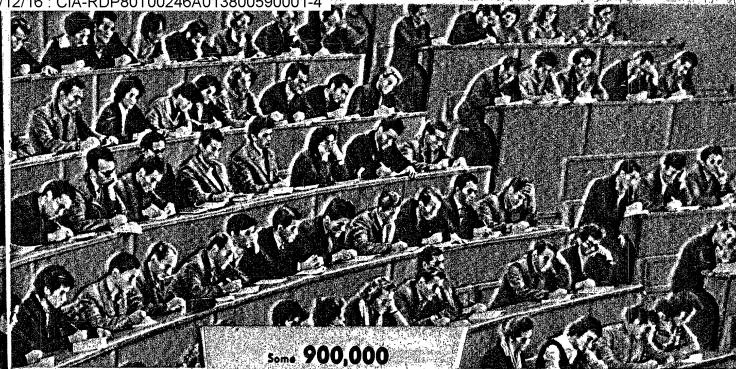
Higher education is equally well established in the national republics and regions as in the central districts. For example, in Uzbekistan, where previously the entire population was quite illiterate, there are now 110 students to every 10,000 of the population. This is three times as many as in France, seven times as many as in Turkey and sixteen times as many as in Iran. In the whole of the Central Asian republics, which before 1917 had practically no intelligentsia, every fourth inhabitant nowadays has had a higher or a secondary education.

There are more than 13 million people in the U.S.S.R. who have a higher, an unfinished higher, or a specialised secondary education. For the number of specialists who have graduated from higher educational institutions, the U.S.S.R. has far surpassed all other countries of the world. Thus, for example, whereas 38,000 engineers graduated in the U.S.A. in 1959, 106,000 graduated in the U.S.S.R. in the same year and 117,000 in 1960.

The names of many Russian scientists have been inscribed in the history of world science. M.V. Lomonosov was a brilliant scientist. D.I. Mendeleev left a notable mark on the history of science with his periodic system of the elements. I.P. Pavlov, the physiologist, was the founder of the theory of the higher



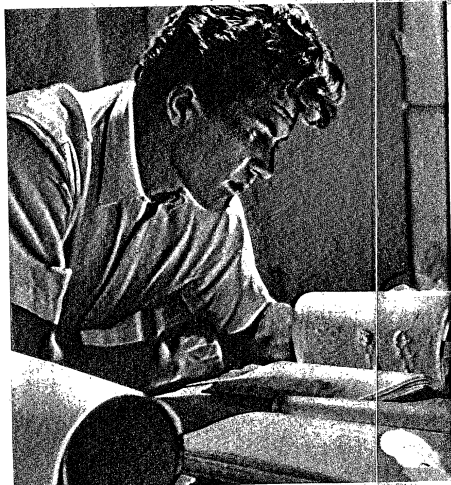
▲ Attending lectures



Some **900,000**

specialists with higher, unfinished higher, and secondary education are annually trained in the U.S.S.R.

Experimenting in a chemistry laboratory ▼



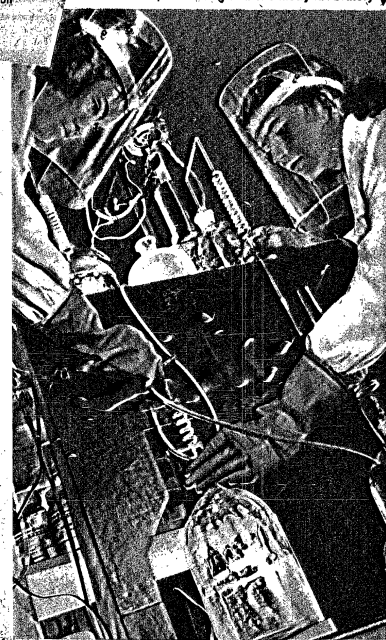
Today - a student, tomorrow - an engineer or, perhaps, a scientist

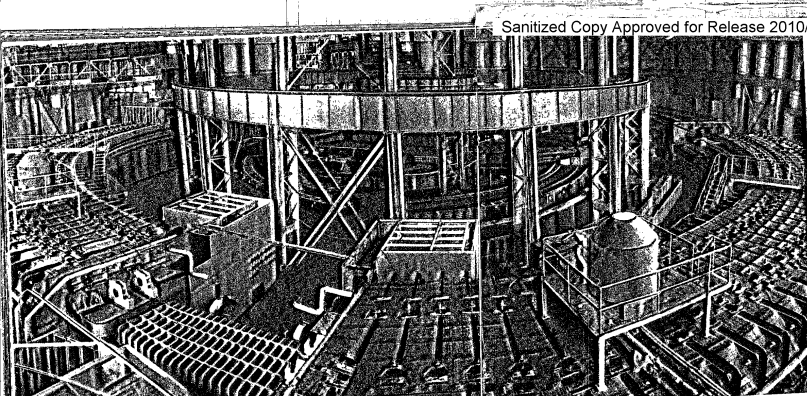
nervous activity. A. S. Popov invented radio. N. Y. Zhukovsky, the father of Russian aviation, created the school of modern aerodynamics. K. A. Timiryazev made a glorious contribution to the country's biology. I. V. Michurin was the greatest transformer of nature. K. E. Tsiolkovsky, the Russian scientist, laid the foundations of the theory of rocketry and interplanetary flights. One might name dozens of prominent scientists whose discoveries and inventions have made an invaluable contribution to the world's scientific treasure-store. But the scientists received no appreciable support from the tsarist government.

Soviet society has provided exceptionally favourable conditions for scientific development. From the outset it attracted scientists to the work of putting the state's long-term plans of development on to a scientific basis. All the years of the U.S.S.R.'s existence have been a period of sturdy scientific development. In 1960 there were 350,000 scientific workers in the U.S.S.R. (the figure was a little over 10,000 in 1913). Instead of the small laboratory where Mendeleev carried out his experiments, there are now splendidly equipped chemical institutes. Instead of the workshop where Zhukovsky toiled, institutes of aerodynamics, precision-tool industry, mathematics and computer technology have appeared. Instead of the little garden where Michurin experimented, thousands of collective- and state-farm orchards and special botanical gardens have been laid out.

The U.S.S.R. Academy of Sciences is one of the largest centres of world science. It includes 200 institutes, laboratories, observatories and other scientific establishments (in all there are over 3,500 scientific establishments in the country). All the Union Republics have their

Studying literature at the Uzbek State University, Samarkand





▲ The Soviet 10,000-million electronvolt proton synchrotron - one of the world's largest



own national Academies of Sciences (in Moldavia there is a branch of the U.S.S.R. Academy of Sciences).

The scientists of the U.S.S.R. have considerably multiplied the achievements of their predecessors and made a substantial contribution to world science. The mathematicians have been responsible for works of primary importance particularly in regard to the differential calculus, the constructive theory of functions, the analytical theory of numbers and the theory of probability. Physicists have won universal recognition in the sphere of atomic energy, low temperatures, cosmic rays, semi-conductors, radio and optics. Much has been achieved by Soviet chemists in regard to organic synthesis, the kinetics of chemical reactions, catalysis of superficial phenomena, etc. Soviet physiology holds one of the first places in world science.

In the U.S.S.R. successful work is in progress on atomic energy problems: the first atomic power stations in the world have been built, a powerful proton synchrotron, the inter-continental ballistic rocket, the famous sputniks and luniks, splendid jet-planes and the Lenin atomic ice-breaker have been constructed. The world's first manned space flight has been accomplished. The name of Yuri Gagarin, the first cosmonaut, is now familiar to all mankind.

In the course of the fulfilment of the Seven-Year Plan, Soviet scientists and production innovators are solving complicated problems connected with the complex mechanisation and automation of production. Computers which do the work of tens of thousands of people are being developed at an accelerated speed. Problems connected with the creation of a single power grid throughout the U.S.S.R. are being worked on. Important work is in progress on semi-conductors and cosmic rays. Further investigations are being made into the atom nucleus, with particular attention centred on finding methods of controlling thermo-nuclear reactions. Chemists have turned their efforts to methods for obtaining a wide variety of products containing properties not present in natural materials. Biologists are trying to control the vital processes of the living cell and micro-organisms. Medical workers are engaged in the noble task of finding ways of prolonging man's span of life.

Representatives of the agricultural sciences are solving problems to raise crop yields, to increase livestock productivity, to widen the scope of the work on selection and seed production, to improve breeds of agricultural livestock.

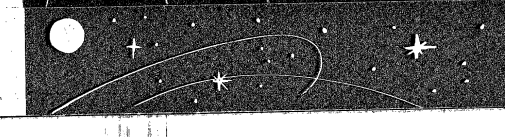
Close connection is maintained between science and production, this being one of the basic principles on which Soviet scientific institutions work in general. This increasingly promotes the removal of the age-old division between mental and physical work.

▲ The atomic ice-breaker Lenin in the Arctic



Yuri Gagarin, a Soviet citizen, became the first man in a space flight early on April 12, 1961

Yuri Gagarin left Soviet and Communist countries for the first time in a space flight



The Rise in the Living Standards

Reasons for the rise in the living standards of the Soviet people are the country's economic growth, the development of the productive forces to such an extent as to ensure an abundance of products and to satisfy the needs of all citizens. This problem is being successfully solved and soon the day is not far distant when Soviet society will be able to go over to the communist principle of distributing material wealth. "From each according to his ability, to each according to his needs."

The social feature, character of the Soviet social system is that it does in actual practice guarantee a continuous increase in the incomes of the working people. The real wages of the workers (taking into account pensions, allowances, free education and medical service, and the fact that unemployment has been abolished) and working hours reduced have increased nearly 4 times between 1918 and 1953. The real incomes of the working people have increased nearly 10 times in the same period.

New blocks of flats in the country's towns and villages

The National Income. In the 35 years of the existence of the socialist state, the country's national income has increased 20-25 times. During the same period the national income of the U.S.A. has increased only 3-4 times more than the Soviet Union and France has only doubled.

The entire national income of the U.S.S.R. belongs to the working people. Three quarters of it is spent on satisfying the personal material and cultural needs of the population. The rest is used to expand social production and to cover social requirements. The incomes of the workers and other employees in the U.S.S.R. consist of wages and salaries and various other allowances, benefits and allowances, which the population receives from the state.

Each person in the U.S.S.R. receives his share of the material wealth of the socialist principle "from each according to his ability, to each according to his needs." In other words, the amount of remuneration

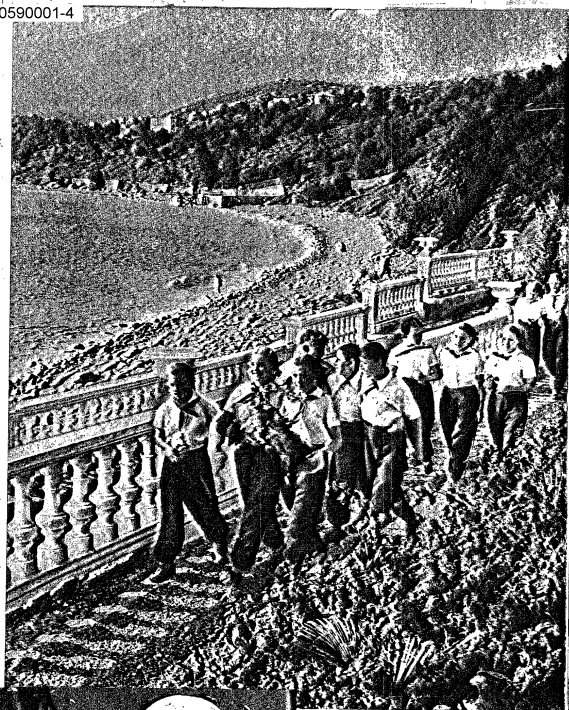
Seven-Year Plan

15 million flats in towns and 7 million houses in the countryside will be built in seven years

1959-1965



◀ Daddy's story



▲ Young Pioneers at their Artek Camp in the Crimea



◀ "First aid"

Everyone knows that from time immemorial taxation has dogged the footsteps of man and weighed heavily upon him. The U.S.S.R., too, has been unable to manage without taxation. But a decision was adopted in 1960 to abolish all taxation on workers and other employees in the course of the period between October 1, 1960 and the end of 1965. This decision could be adopted because the mighty development of all branches of the national economy now guarantees a steady increase in the Budget resources of the Soviet state.

With the abolition of taxes, the Soviet people will live even better. By 1966 the incomes of workers and office employees will increase by approximately 7,400 million rubles each year. Thus, every working person will have an annual increment approximately equal to one month's earnings. By the end of 1966 there will be a 40 per cent increase in the real incomes of workers and other employees and of collective farmers.

Apart from Wages. The portion of the material wealth which the Soviet people receive apart from their wages plays a special role in increasing their prosperity, a role which becomes more important each year.

In 1960 the state spent about 24,500 million rubles - a sum which was nearly 6 times as great as in 1940 - on numerous benefits and allowances. But in 1965 these benefits and allowances will amount to 36,000 million rubles or 380 rubles a year per worker.

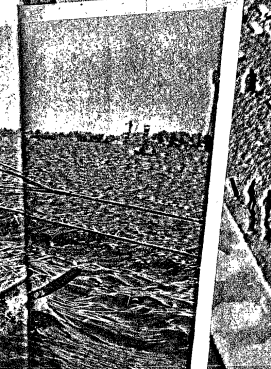
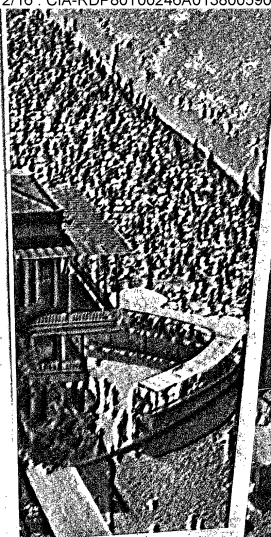
How are these funds distributed? Every Soviet family receives them in some form or another. We have already mentioned that education is free in all the educational institutions of the U.S.S.R. All medical assistance is given free as well. The volume of the medical services can be judged by the fact alone that in 1959 there were 19 doctors (this does not include dentists) to every 10,000 of the population in the U.S.S.R., whereas in the U.S.A. (1957) there were 12, in France (1958) - 10.7, in the German Federal Republic (1958) - 13.5.

The state pays for the maintenance of more than 20 million people whose pensions were recently considerably increased;

Aquatic skiing at Khimki, Moscow



On the Black Sea beaches



6.7 million children are cared for in kindergartens, creches and children's homes. 3,400 thousand students in higher and secondary specialized educational institutions, and students in higher technical colleges and schools receive stipends and hostel accommodation. 6,000 thousand children enjoy holidays each year in young people's tourist camps and colonies. About three million working people rest or are given treatment each year in sanatoriums or rest homes. Some million mothers of large families and women of mothers receive allowances from the state.

The Shorter Working Day. The shorter working day has not only been introduced to the well-being of the Soviet people. In 1955 the 7 and 8-hour day was introduced for all workers and office employees. In 1958 persons working 7 hours a day will have a 40-hour working week, and from 1960 all working people will be gradually transferred



In a cake and confectionery shop

to the 30- or 35-hour week. The U.S.S.R. will by then have the shortest working day and shortest working week in the world.

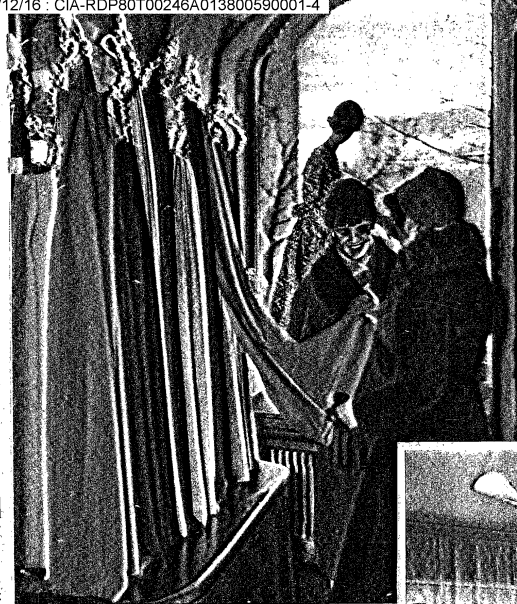
The introduction of the shorter working day in the U.S.S.R. does not mean lower wages but, on the contrary, goes hand in hand with increased wages for the majority of working people.

More and More House Warmings. When visitors come to the Soviet Union they are inevitably struck by the tremendous scale of housing. The scaffolding on new buildings and huge cranes towering over them are a usual sight in the Soviet towns and workers' settlements. Whole blocks of new flats are springing up at an unprecedented rate in Moscow and Vladivostok, Leningrad and Murmansk, in the industrial Donets Basin and far Siberia in the taiga.

During the past decades there has been a fivefold increase in the total amount of housing available in the U.S.S.R. Yet the housing problem is still not solved. For this reason the Soviet Government in 1957 devoted special attention to housing and set itself the aim to give all working people in the next 10-12 years flats with all modern conveniences.

At present 8,800 new flats are made available every day to the Soviet working people. Special factories and works have been built, their final product being the house.

At a bookshop



Show-room of woollen textiles at a department store

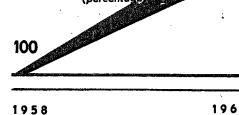
It is not surprising that between 1959 and 1965 the builders will be giving the country 15 million flats. In addition, 7 million houses will be built in the countryside. In other words, during the course of seven years almost 100 million people will be giving house-warming parties.

Here are some more extremely characteristic figures. In two years of the present Seven-Year-Plan period as much floor space has been built in the towns as existed previously in the whole of tsarist Russia, i.e., 180 million square metres. In the U.S.S.R., 14.5 flats per 1,000 of the population were built during 1959. It should be pointed out that in the U.S.A., 8.7 flats were built per 1,000 of the population in the same year, in Britain — 5.5, in France — 7.1, in the German Federal Republic — 10.5, and still less in other countries. During 1959 and 1960, 4,637,000 modern flats were made available to people living in Soviet towns.

Thus, the Soviet Union occupies first place in the world for the scale and speed of house-building. It is chiefly the state that builds these houses. And it is important to note here that rents in the U.S.S.R. are the lowest in the world. Rents, including communal services, are never more than 4-5 per cent of the family budget.

Seven-Year Plan

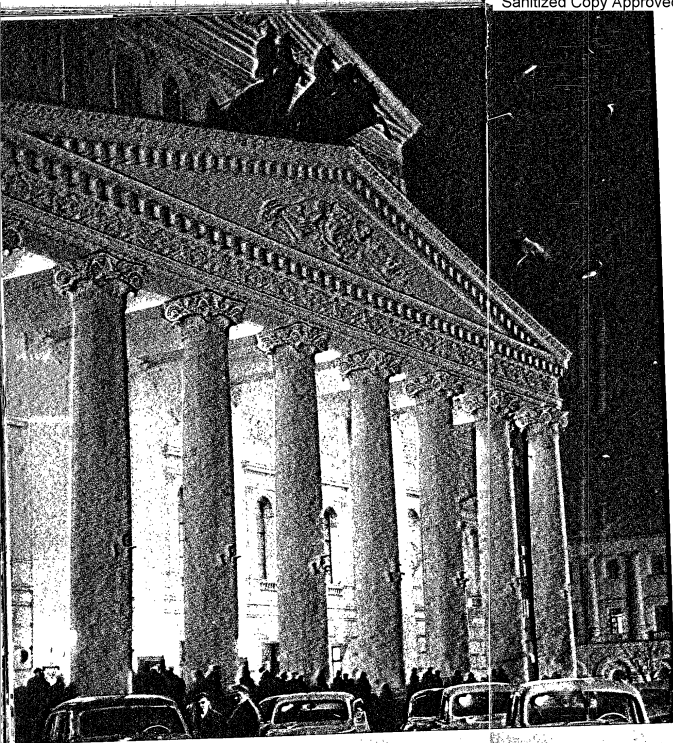
National Income
(percentage)



Increase in the People's
Real Incomes
(percentage)



The living room of a standard town flat



The State
Academic Bolshoi
Theatre, Moscow

Art Belongs to the People

In every town and village universal attention is concentrated on events in the field of culture. Every new book, every brilliant theatrical performance, every opera and film is warmly welcomed and heatedly discussed by all kinds of people. The composers and performers of these works - the actors and writers, composers and musicians, producers and conductors - are among the most popular people in the U.S.S.R. Thousands of links connect them with audiences that run into many millions. "A creations of the heart," as Maxim Gorky called the arts, is addressed to the people, the wisest of all its critics and admirers.

All the books put out by the hundreds of publishing houses in the country find their way to the U.S.S.R. Book Chamber in Moscow. Here more than 1,500,000 books can

be found in more than 23,000 million copies, published between 1918 and 1960 in 135 languages of the peoples of the U.S.S.R. and countries abroad.

The population of the U.S.S.R. is seven per cent of the total world population, yet one-quarter of all the world's books are published here. Everything in world culture that the love of mankind has ever inspired meets with a lively response in the hearts of the Soviet people. A glance at the repertoires of the theatres which stage the works of many foreign playwrights, at the translated literature (the U.S.S.R. occupies first place for book translation) will convince anyone on this point. Often the books of foreign authors are printed in more copies in the U.S.S.R. than in the authors' native lands.

V. I. Lenin, founder of the Soviet state, dreamed of the

day when the whole wealth of culture would be put at the disposal of the people. "Indeed, our workers and peasants," he said, "deserve something better than spectacles. They are entitled to real great art." This day has now arrived. The theatres, museums, picture galleries and concert halls are now filled with representatives of the widest sections of the people. They enjoy most outstanding works of art, they look at and listen to performances by the greatest masters of the land.

The performances of pianists and violinists D. Oistrakh, L. Oborin, S. Richter, I. Bezrodny, E. Gilels, and of other fine masters, who are warmly received in many parts of the world, stand in a class apart for simplicity, clarity, fullness of content, strength and temperament. The finest works of Prokofiev, Myaskovsky, Shostakovich, Khachaturyan and Kabalevsky, the songs of Dunayevsky, Solov'yev-Sedol and many other Soviet composers have won wide popularity. Over 1,300 different music academies and schools, 21 conservatoires and several conservatoire-type academies of higher learning are training worthy successors to these splendid performers and composers.

Among the favourite music and dance groups in the country are the U.S.S.R. State Folk Dance Company, directed by I. Moiseyev, the Beryozka Dance Company and the Soviet Army Song and Dance Company, which

are equally well known abroad. Each Union Republic has its own national song and dance companies, and many towns have organised their own choirs and national instrumental orchestras.

Probably there is no one who, while spending a few days in Moscow, has failed to visit the Bolshoi Theatre with its world-famous ballet. The Gorky Art Theatre and the Maly Theatre in Moscow, the Kirov and Pushkin Theatres in Leningrad are much loved by theatre-goers. There are also famous theatrical groups in Kiev, Tbilisi, Tashkent, Sverdlovsk, Novosibirsk and many other towns.

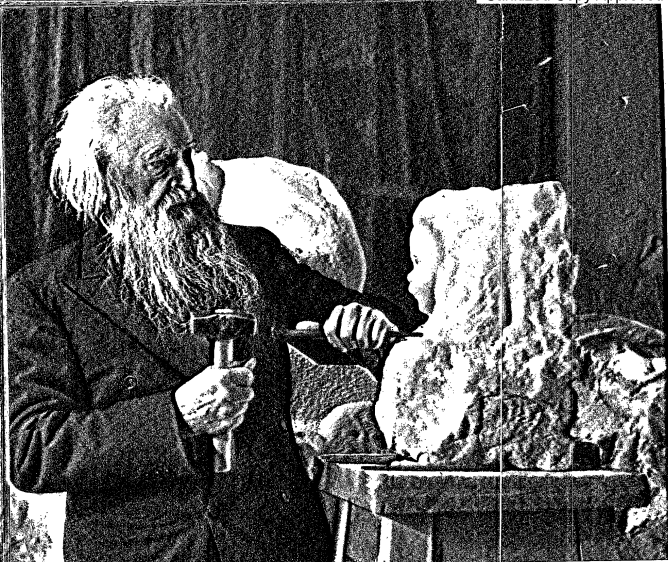
Every evening the footlights are switched on and the curtains raised in the 500 theatres of the U.S.S.R. In 1959 alone, 89 million people attended their performances.

The cinema is the most popular form of the arts in the U.S.S.R. Every year 35 film studios put out hundreds of feature films, popular-scientific and documentary films. More than 3,600 million people attended the cinemas in 1960.

People who love dancing, music and acting become members of the Palaces and Houses of Culture. There are more than 129,000 clubs of this kind in the U.S.S.R., where the work is carried on by hundreds of thousands of amateur art groups with many millions of members. Folk art is very popular. Many fine artists, singers and composers began their creative work in amateur art groups.

Beryozka's dancers





Sergei Kononov, the well-known sculptor, in his studio

Students of the University of Culture attending a lecture in the Sevastopol picture gallery



Other forms of folk art such as wood- and bone-carving, lace-making, carpet-making, painting on wood and lacquer and art needlework are well represented in the U.S.S.R.

There are always crowds of people at the exhibitions and museums. The State Hermitage and the Russian Museum in Leningrad and the Tretyakov Gallery in Moscow, where the immortal works of Russian and West-European masters are housed, are world famous.

In recent years there has been a considerable extension of the cultural relations between the U.S.S.R. and other countries. These include the Soviet Union's participation in international exhibitions, festivals and gatherings, the organisation of foreign exhibitions in the U.S.S.R., exchange visits between representatives of science, literature, the arts and sports, tours of foreign visitors in the U.S.S.R. and the visits of Soviet people to foreign countries, and a great deal more. During the last four years over 3,000,000 Soviet citizens travelled abroad and over 2,000,000 foreigners visited the U.S.S.R. More than 11,000 foreign students and post-graduates are attending Soviet educational establishments and hundreds of young Soviet people are engaged in studies abroad.

The Soviet people consider that the further development of economic and cultural relations among peoples will add greatly to improvements in the international situation and will create more favourable conditions for guaranteeing peace and the security of the world.

STILLS FROM SOVIET FILMS

- Sisters
- The Fate of a Man
- Seryozha
- Ballad About a Soldier





OLYMPIC CHAMPIONS

- | | |
|--------------------|--------------------|
| ◀ Yuri Vlasov | Boris Shakhlin ▶ |
| ◀ Vera Krepkina | Larisa Latynina ▶ |
| ◀ Lydia Skoblikova | Tamara Press ▶ |
| ◀ Pyotr Bolotnikov | Victor Kapitonov ▶ |

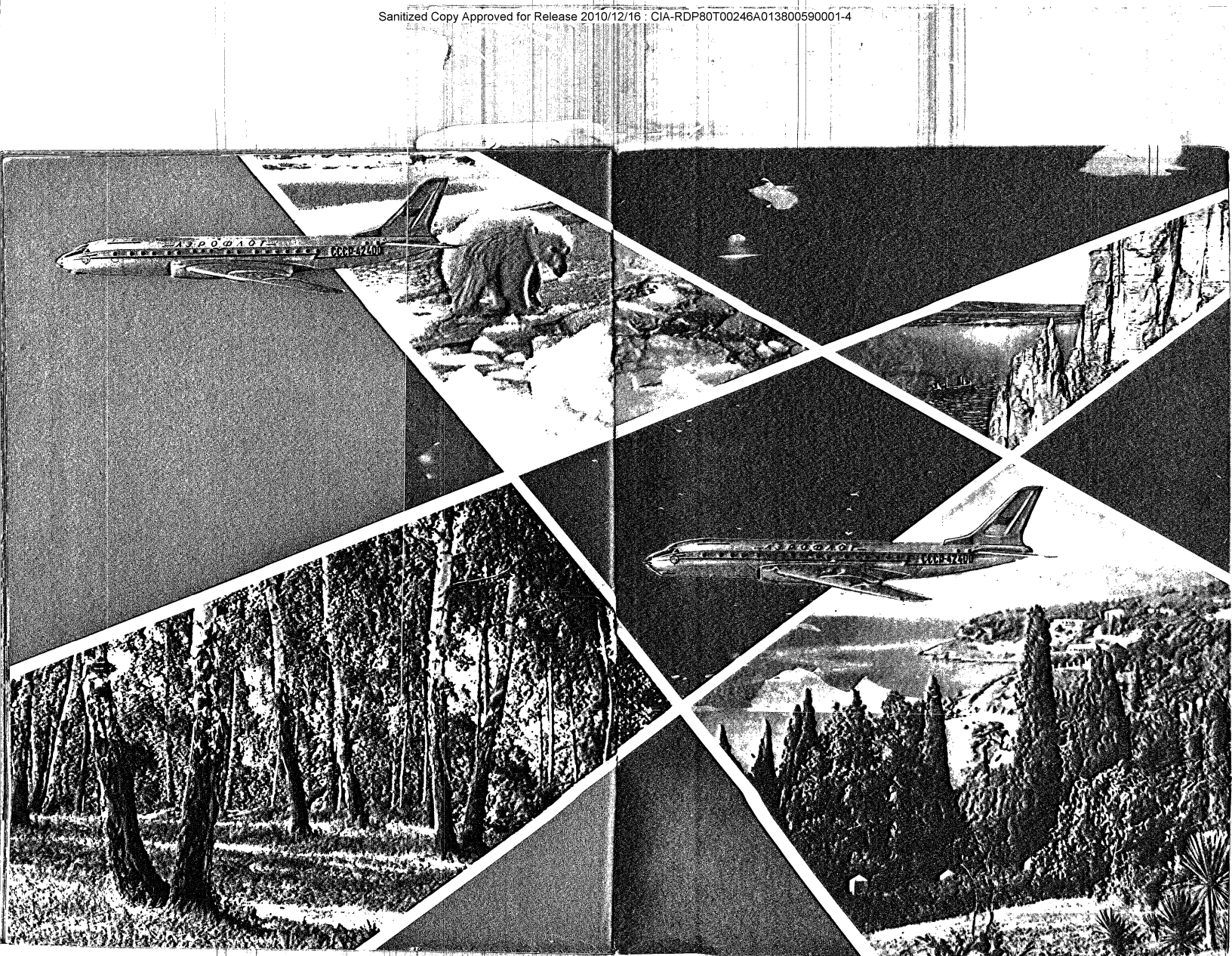
Sports for the Millions. Soviet society shows great concern about the physical training of its citizens, particularly young people. Soviet people have opportunities of engaging in every kind of sports.

The main thing about the physical culture movement in the U.S.S.R. is its mass character. Approximately 200,000 physical culture groups with over 20,000,000 members engage in more than 50 types of sports. They have 2,000 large stadiums, over 6,000 sports grounds, over 27,600 football fields, over 200,000 volley-ball and basket-ball pitches and many other sports facilities.

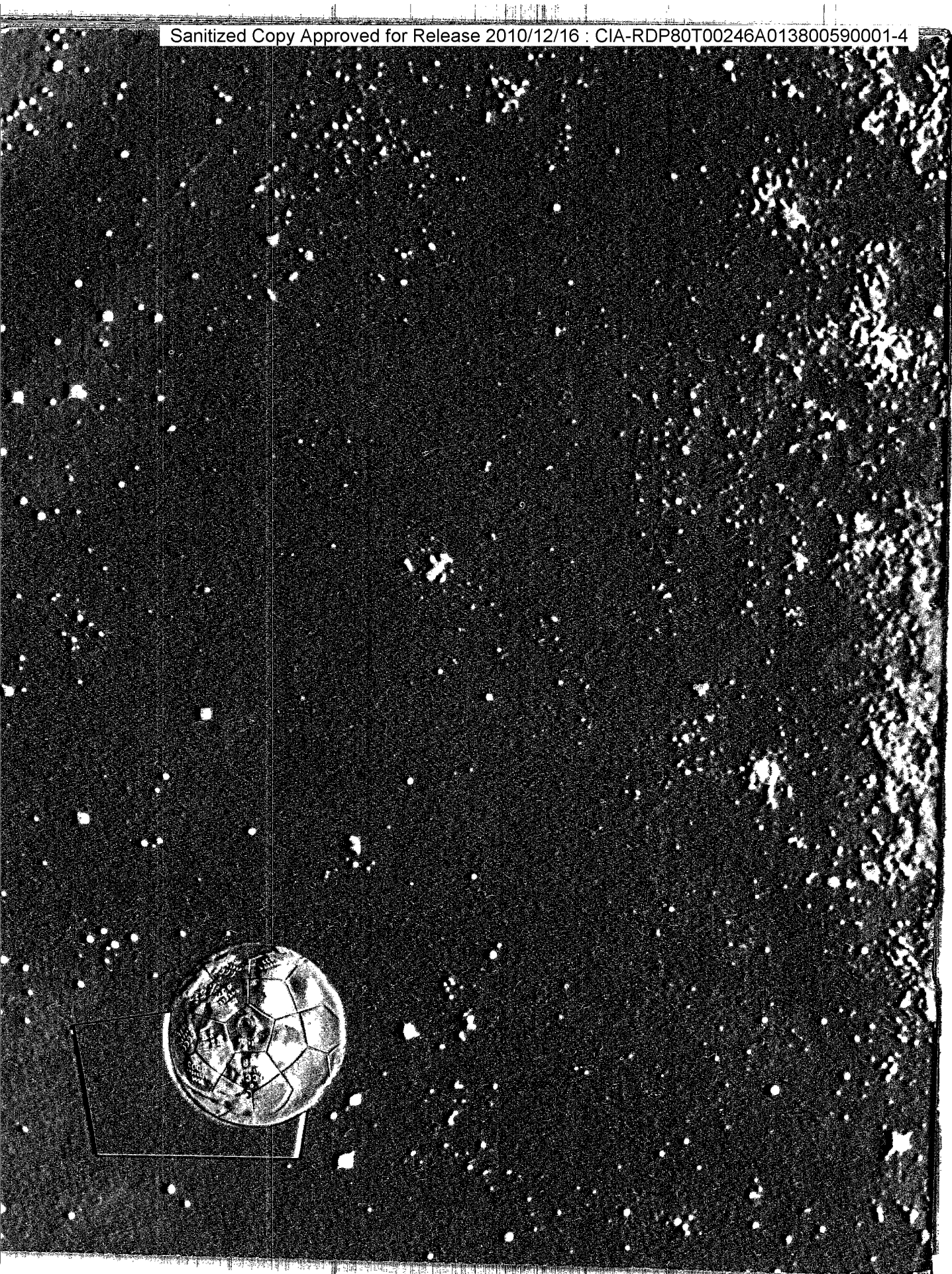
The last two Olympic Games in Melbourne and Rome, where Soviet sportsmen carried off the largest number of awards (for example, in Rome they won 103 medals, 43 of which were gold ones) are evidence of the considerable success of Soviet sports.



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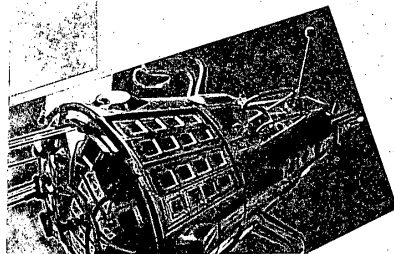
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"A scientist may suggest an idea which is a scientific revolution, and an engineer may make a discovery which promises to be a technical revolution in production, but mankind will derive benefit from all that only when the worker takes a hand in it."

N. S. Khrushchov

Open-Doors Day! This is a tradition in the Soviet Union—our educational establishments open their doors wide to all who wish to visit them. On that day you may wander through the classrooms, lecture halls, laboratories and workshops.... You can imagine you are a student at a technical college, academy or vocational school. These are days for the curious and inquisitive, for all who wish to pass through the wide-open doors.

Today we open the doors of the Soviet Union's technical training schools to you. Welcome! Come in and ask your questions....



We live in an age of amazing exploits.

The first atomic electric power station, the first atomic icebreaker, gigantic accelerators, sputniks, the first space-ships...

All these wonderful achievements, which but yesterday were the cherished dreams of scientists of all countries, have today been harnessed by our workers to the service of the people.

And, finally, man's break into space. The Columbus of the Cosmos, Major Yuri Alekseevich Gagarin, a graduate of one of our trade schools, is not only an aviator by profession, but a foundry-man by trade.

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FACTS AND FIGURES

In the Soviet Union, skilled workers are trained by the state, either at vocational schools or directly on the job.

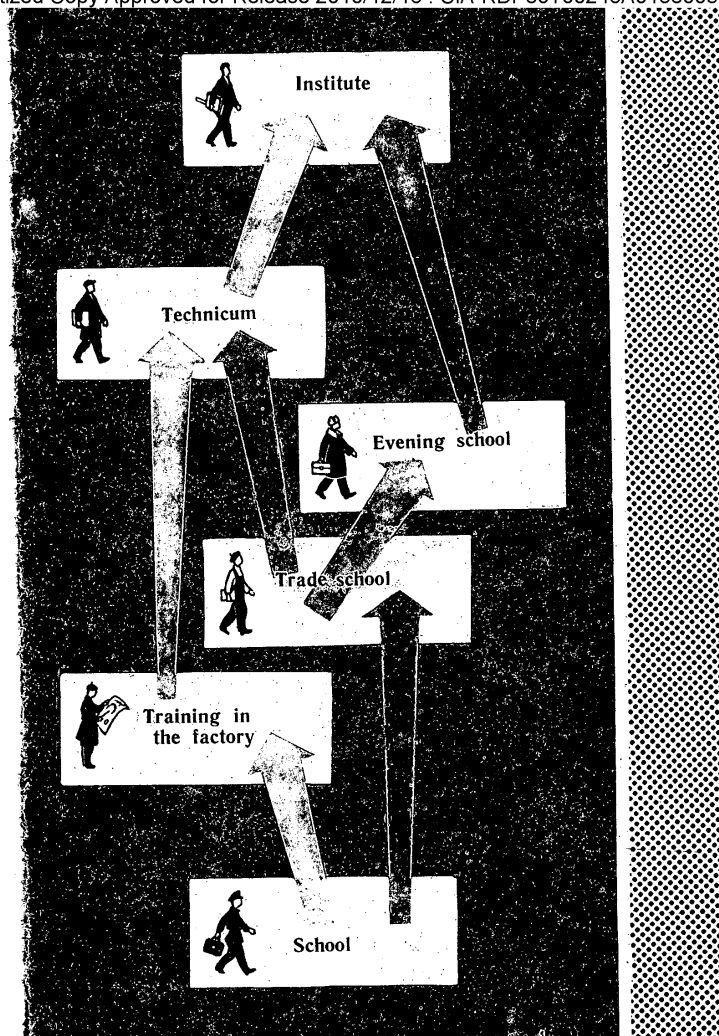
There are over 4,000 technical training schools in the Soviet Union; during the past 20 years they have produced about 12,000,000 young skilled workers for the key branches of our national economy.

The schools now give training in some 800 trades. Instruction is free of charge.

The state appropriates large sums annually for the upkeep, repair and construction of technical training schools. In some schools the trainees receive free meals, uniforms and footwear, while in others they get government grants. Textbooks and exercise books are issued free of charge. During practical training at factories, mines or mills, trainees receive wages for the work they do. On finishing the school each trainee is given a grade, depending on his skill, and is assigned to a job in his trade in accordance with the state programme for the placement of young workers.

Such is the path to the mastery of knowledge, skill and one's trade.

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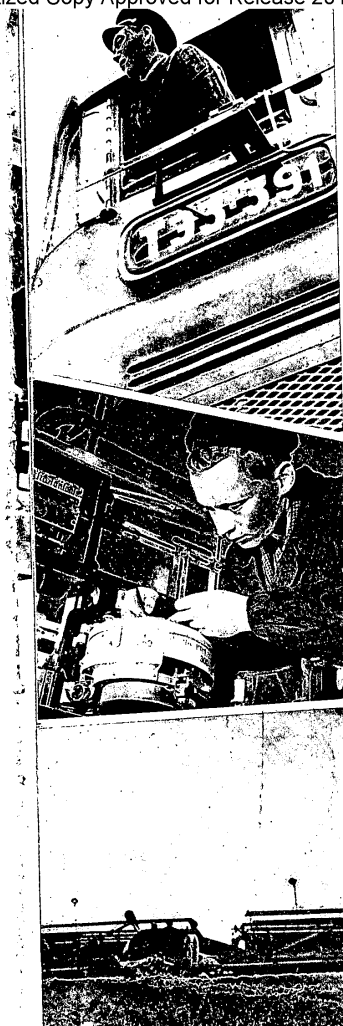


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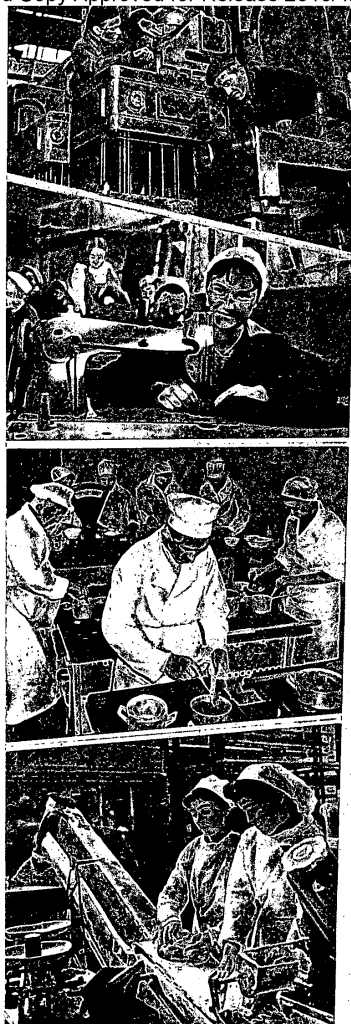
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**FOR THOSE
INTERESTED
IN HISTORY**

The history of the Soviet system of vocational education goes back to 1920, when Vladimir Lenin signed a decree concerning the technical training of workers. In order to raise the technical standard of the broad masses of workers and to meet the acute demand of our industry for skilled manpower, training was made compulsory for all workers between 18 and 40 who had not gone through a definite minimum of general education and vocational training.

It was in 1920, that the first Factory-Training Schools (F.T.S.) ap-



peared. They were set up at large industrial enterprises to train skilled workers. Until 1940 the Factory-Training Schools were the principal establishments for training young skilled workers.

The construction of new factories, mines and mills, the expansion of all branches of our national economy, demanded a continuous inflow of trained manpower in both industry and agriculture. In 1940 the Presidium of the Supreme Soviet of the USSR passed a decree establishing a state system of technical training schools.

The decree provided for a yearly enrolment in these schools of from 800,000 to 1,000,000 boys and girls from urban and rural localities. Enrolment was conducted on a unified state plan. Whereas the Factory-Training School enrolments were planned only by individual industrial enterprises, the enrolment programme for the new technical training schools was based on the requirement of the national economy as a whole.

Vocational Training Schools, Railway Schools and Factory Trade Schools were established.

In 1949 mining schools were organised.

All these schools accepted young people of both sexes, between the ages of 14 and 17, having at least seven years of schooling. In the course of two to three years they trained skilled workers for the metallurgical, engineering, coal mining and printing industries, and the postal, communications and transportation services.

In 1954 schools were set up to

train tractor and lorry drivers, harvester combine operators and maintenance and repair men. Technical schools were also opened in 1954 for boys and girls who had finished

secondary school. They trained highly-skilled workers in a number of trades requiring an advanced level of general education, and also junior technical personnel.



In December, 1958 the Supreme Soviet of the USSR passed a law on strengthening the links between school and life and further developing the system of public education. In accordance with this law, vocational training institutions of a unified type, urban and rural vocational schools, are being set up.

The reorganisation of the technical training system was necessitated by the demand for more highly skilled workers owing to increased automation and mechanisation in industry.

The urban and rural vocational schools will admit young people who have finished the general eight-year schools. The course of training will vary from one to three years, depending on the trade.

WHAT KNOWLEDGE SHOULD A WORKER HAVE?

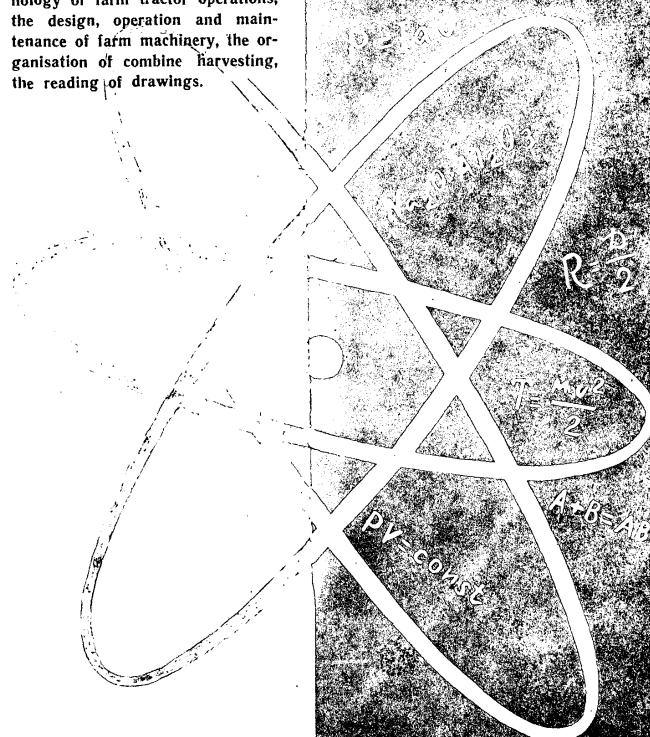
Technical progress, mechanisation and automation present ever-increasing demands to the worker of today. How can you operate a complex machine, comprehend a technological process or read a complicated blueprint if you do not have a solid background of general education?

Modern automated industry de-

mands from our workers a thorough knowledge of an entire series of general and technical subjects, above all, mathematics, electronics, radio engineering, mechanical drawing, the general technology of production, production economics and the science of materials.

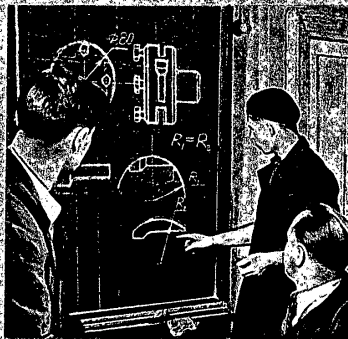
The programme of the theoretical course of training for tractor driv-

ers includes: the fundamentals of agronomy, the fundamentals of the science of materials and machine repair, the organisation and technology of farm tractor operations, the design, operation and maintenance of farm machinery, the organisation of combine harvesting, the reading of drawings.



+ 2000
+ 4500

6500

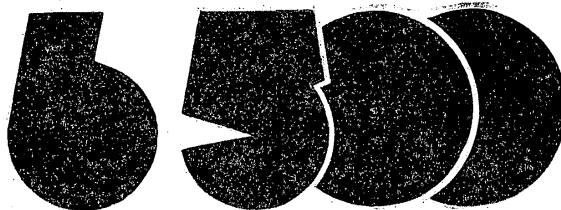


The reorganisation of vocational education in the Soviet Union involves an analysis of the content and character of the working processes in many thousand trades. Naturally, changes these trades are bound to undergo in connection with the growth of mechanisation and automation were taken into account.

As a result, we have a list of trades and specialties which will have to be taught in the vocational schools or on the job at our industrial enterprises. The list includes a large number of entirely new trades connected with the mechanisation and automation of industrial processes; it likewise includes a long list of allied and complex trades of a fairly broad scope trades in which one worker operates several different kinds of machines or units, or performs several types of work which are technologically connected with each other, such as:

- Reinforced concrete articles rollers;
- Computing machine operators and mechanics;
- Semi-conductor instrument assemblers;
- Mine electric fitters engaged in mounting and adjusting automatic and remote controlled mining machinery.

All in all, the list contains 6500 trades. Of these, 2000 will be taught in our vocational schools and 4500 at our factories, mines and mills.



PROGRAMMES

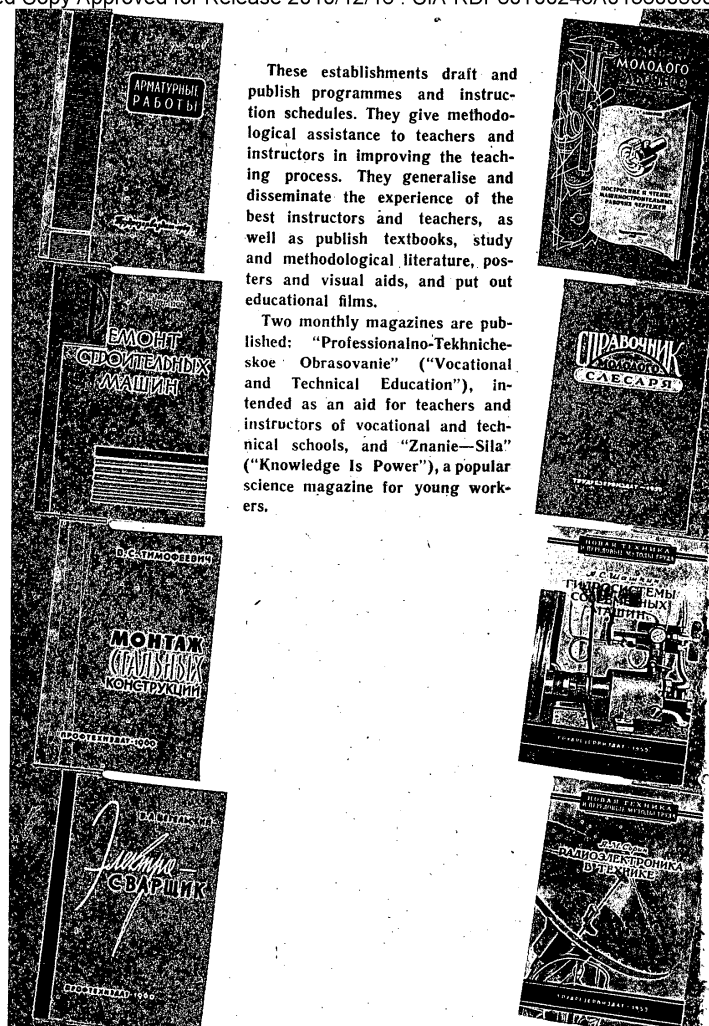
In the USSR, skilled workers are trained according to 8,500 standard programmes—one for each trade.

While reflecting, to the utmost, the ties between modern industry, science and engineering, the programmes take special account of the specific character of the worker's operations in each particular trade.

This is not an easy task. Programmes and instruction schedules alone are by no means enough to ensure a high standard of in-

struction in each vocational school; methodological literature for the instructors and teaching staff, unified textbooks, and visual aids are also indispensable.

The latter needs are catered for by special institutions of the State Committee of the Council of Ministers of the U.S.S.R. for Vocational and Technical Education: The Centre of Methods of Training, The Scientific Research Laboratory, the State Pedagogical and Textbook Publishing House (Prof-tekhizdat), and the Teaching Aids Manufacturing Trust.



These establishments draft and publish programmes and instruction schedules. They give methodological assistance to teachers and instructors in improving the teaching process. They generalise and disseminate the experience of the best instructors and teachers, as well as publish textbooks, study and methodological literature, posters and visual aids, and put out educational films.

Two monthly magazines are published: "Professionalno-Tekhnicheskoe Obrazovanie" ("Vocational and Technical Education"), intended as an aid for teachers and instructors of vocational and technical schools, and "Znanie—Sila" ("Knowledge Is Power"), a popular science magazine for young workers.

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LET US VISIT A CLASSROOM...

In our vocational schools each subject is taught in a special classroom. Here you will find all the necessary visual aids which help the instructors to explain the current lesson in better detail, and the trainees to understand it. Step into a classroom and you will see:

Samples of different kinds of materials,

Workpieces at various stages of treatment or processing,

Working tools and measuring gauges,

Models of machine-tools, mechanisms and their units,

Posters,

Diagrams,

Charts and flowsheets,

Drawings,

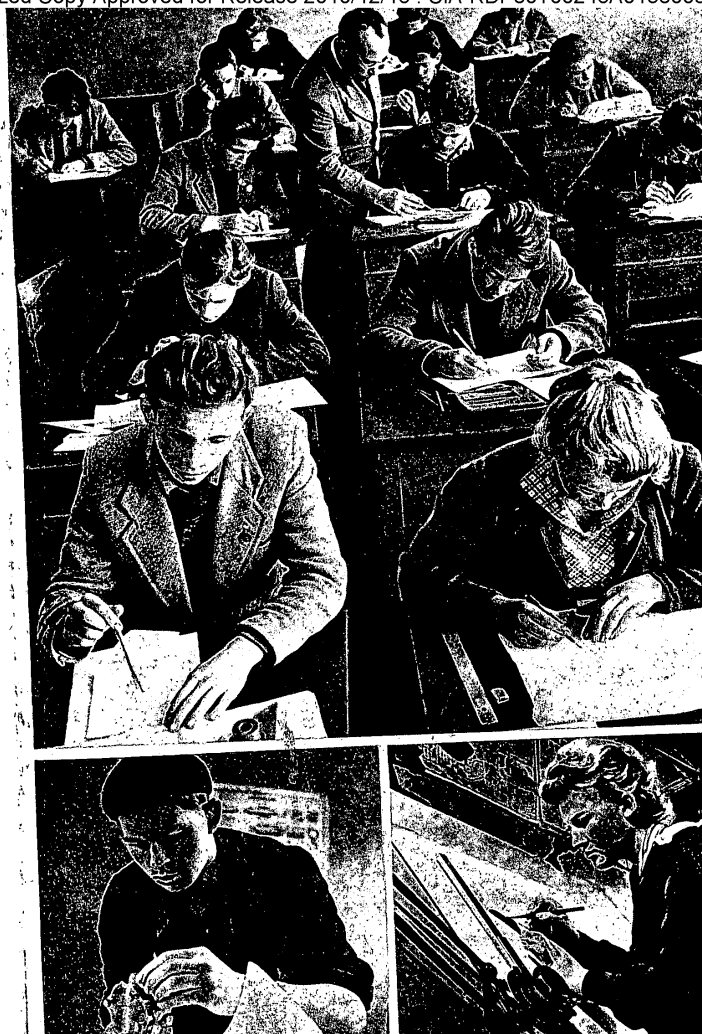
Routing sheets,

Lantern slides,

Study films.



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... A LABORATORY

Laboratory work helps to widen the trainees' technical outlook and consolidate what they have already learned. They train trainees to be independent, helping them to draw conclusions after making experiments, tests and trials.

There are many different kinds of laboratories in our vocational schools, for instance:

- Metal-cutting,
- General metal technology,
- Heat-treatment,
- Building materials testing,
- Mechanical engineering,
- Electrical engineering,
- Building machines,
- Laboratories of mechanisms, machinery and machine units.

Each trade has specific features of its own, and so does each vocational school. Accordingly, each school has its own types of laboratories.

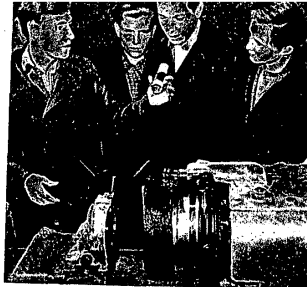


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... A WORKSHOP



Here, in the school workshop, at the fitter's or carpenter's bench, the future worker makes his first steps; here he comes to love his trade, and it is here that the most important question—"Have I thoroughly mastered my chosen profession?" is finally decided.

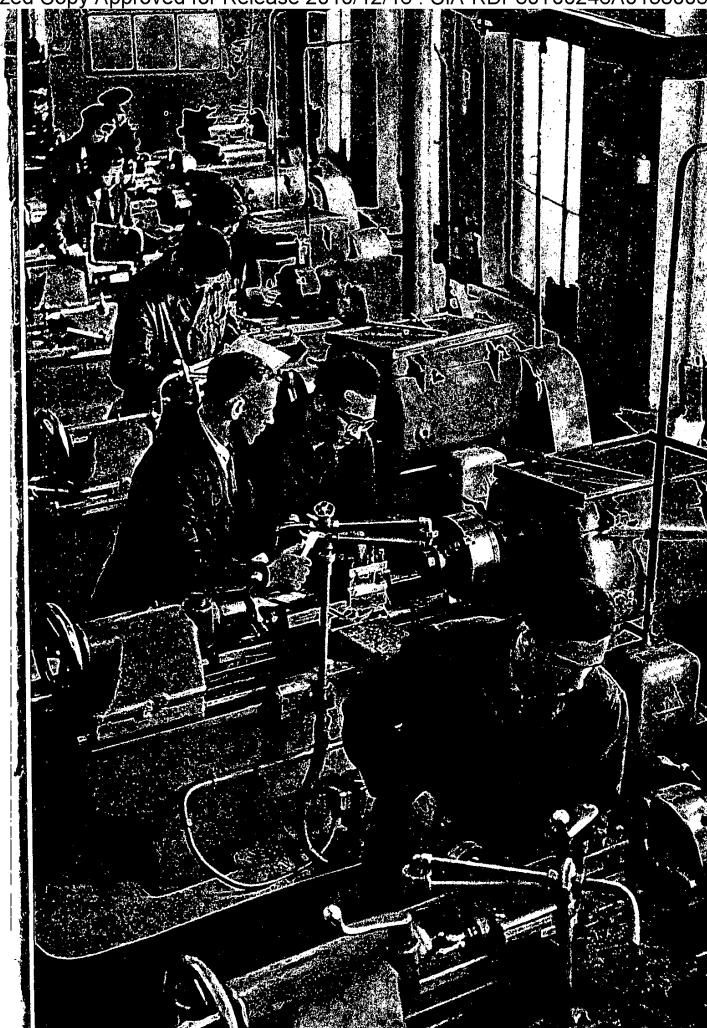
Schools have their own workshops which are provided with modern equipment, tools and fixtures. Each rural vocational school has its own farming plot, together with buildings, machinery, livestock and everything else needed by a school farm.

The vocational school workshop is actually a small-scale factory. Everything here is just as in a large plant: rows of machine tools, hoisting tackle suspended from overhead rails for handling heavy

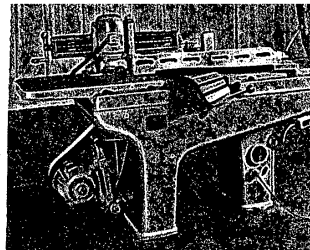
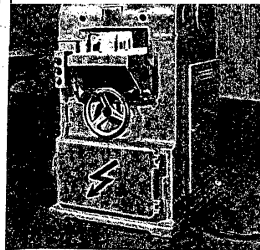
work; tool cribs where, just as in any large plant, the trainee can obtain any tool he needs; and, last but not least, the final product itself, brand-new machines just assembled; with the exception, perhaps, of the bed, all their parts have been milled, planed, turned, and ground by the trainees themselves.



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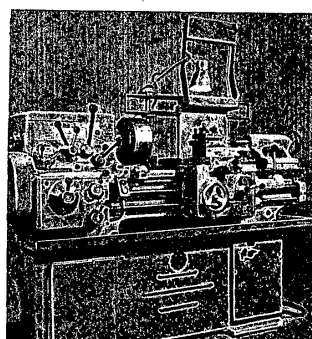
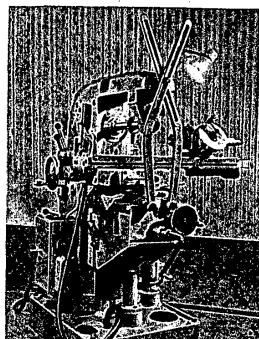


In the workshops and school farms the trainees of our vocational schools acquire their first working skills, accumulate experience and get to learn the fine points of their trade. In the language of methodologists, our vocational training is based on the "operation and complex" system of education. In other words, our future turners, machine-setters, machine operators, erection-workers, machinists, tractor drivers, cooks, tailors, crane operators, etc., are systematically trained to master a number of operations and the entire complex of the technological process under study.

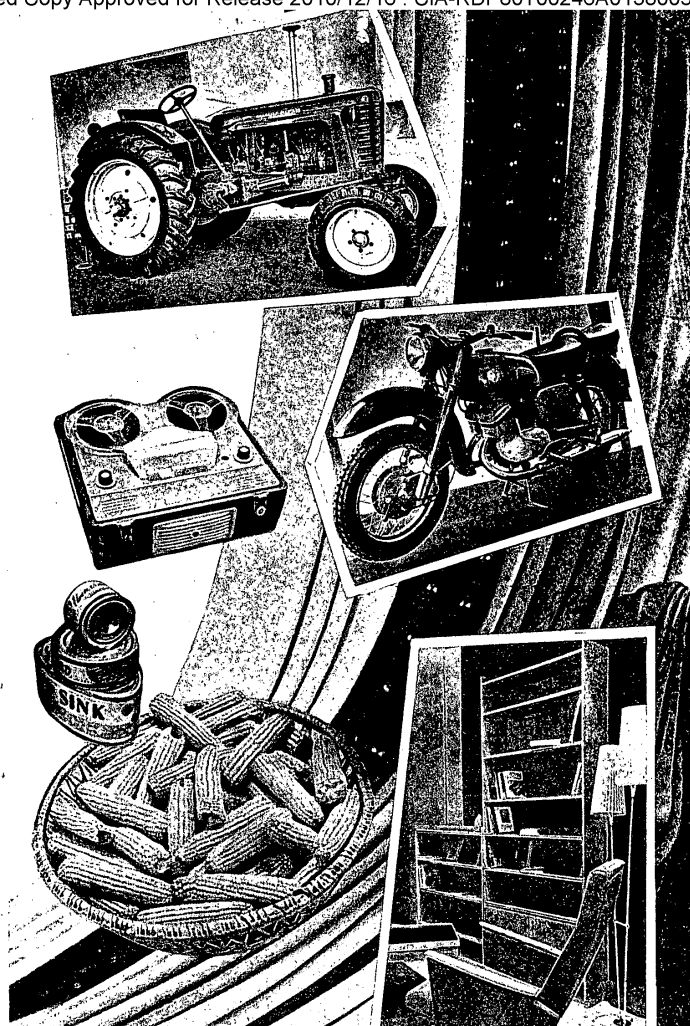
From the simple to the complex! Such is the motto of each programme. Before the trainee is allowed to take the steering wheel of a tractor, he must be able to do any fitter's job, know the tractor like the palm of his hand and have had a fair experience in machine assembly and repair.

In the process of their vocational training the trainees not only gain practical mastery of the necessary skills but produce on orders from industrial enterprises:

- Tools,
- Devices and fixtures,
- Various machine tools, including machines for automatic production lines,
- Furniture.



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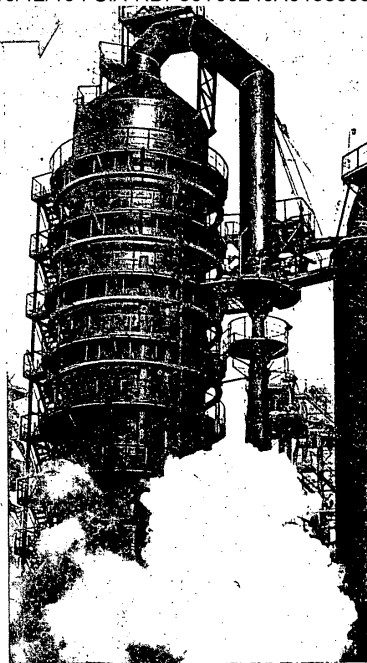
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TO MUTUAL ADVANTAGE

As a rule, a vocational school is
connected with the nearest indus-
trial enterprise of the same line.
This is to mutual advantage.

The factory receives qualified workers from the school; in its turn it supplies the school with a base for the practical training of the pupils.



After a course in the school workshops, the trainees go to the factory for practical training. Here they can identify themselves with the workers and the activities of the factory and not only improve their skills but acquire experience of working among a collective.

The factories give the schools equipment, machinery and mechanisms for their workshops and

training grounds; they pay the trainees wages for work done during practical training in their shops. The schools give methodological assistance to the factories in training workers and improving their skill.

They also help the factory by filling orders for it in the process of training the future workers in the school workshops.



In the Soviet Union vocational training is conducted along three separate channels:

- 1) In training establishments,
- 2) in secondary polytechnical schools with industrial training,
- and 3) at factories, mills and mines,

either by individual-group instruc-

tion method, or at training courses.

In the individual-group method of instruction, one or more trainees are attached to a skilled worker who teaches them the trade according to a definite programme.

As a rule, the factories train only low-skilled workers and workers of those few trades for which they have better training facilities than the ordinary vocational school.

When training workers for complex trades, the factory management



selects candidates from among skilled workers in allied occupations, and from those who have experience in the factory. Thus, experienced machine operators or machine repairmen are selected for training as machine setters.

The State Committee of the Council of Ministers of the USSR for Vocational and Technical Education is the centre for drawing up and publishing syllabuses and programmes, as well as textbooks and special literature for instructing workers on the job.

Every year over 3,000,000 skilled workers for various industries are trained in our vocational schools and factories. In addition, up to 5,000,000 workers every year attend technical training courses at their factories, Schools of Advanced Working Methods, Universities of Technical Culture, and Schools of Communist Work, where they improve their skill and general knowledge. About 2,000,000 workers are studying in their spare time at schools for working youth and the evening and correspondence departments of secondary technical schools and colleges.



Our talented youth have at their service:

31 Houses of Culture,
1593 clubs,
19 million books in the trade
school libraries, and about 12,000
various circles, in which hundreds
of thousands of our boys and girls
develop their abilities and talents...



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The "Trudovie Reservi" (Labour Reserves) Voluntary Sports Society has a membership of 700,000 sportsmen.

Owens 9,000 stadiums, sports halls, swimming pools and skating rinks.

Such a scope, of course, determines quality:

Among the members of this club are:

379 USSR Recordsmen and champions,

12 Olympian Games prize winners,

21 European and World champions...

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OPEN DOORS DAY



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